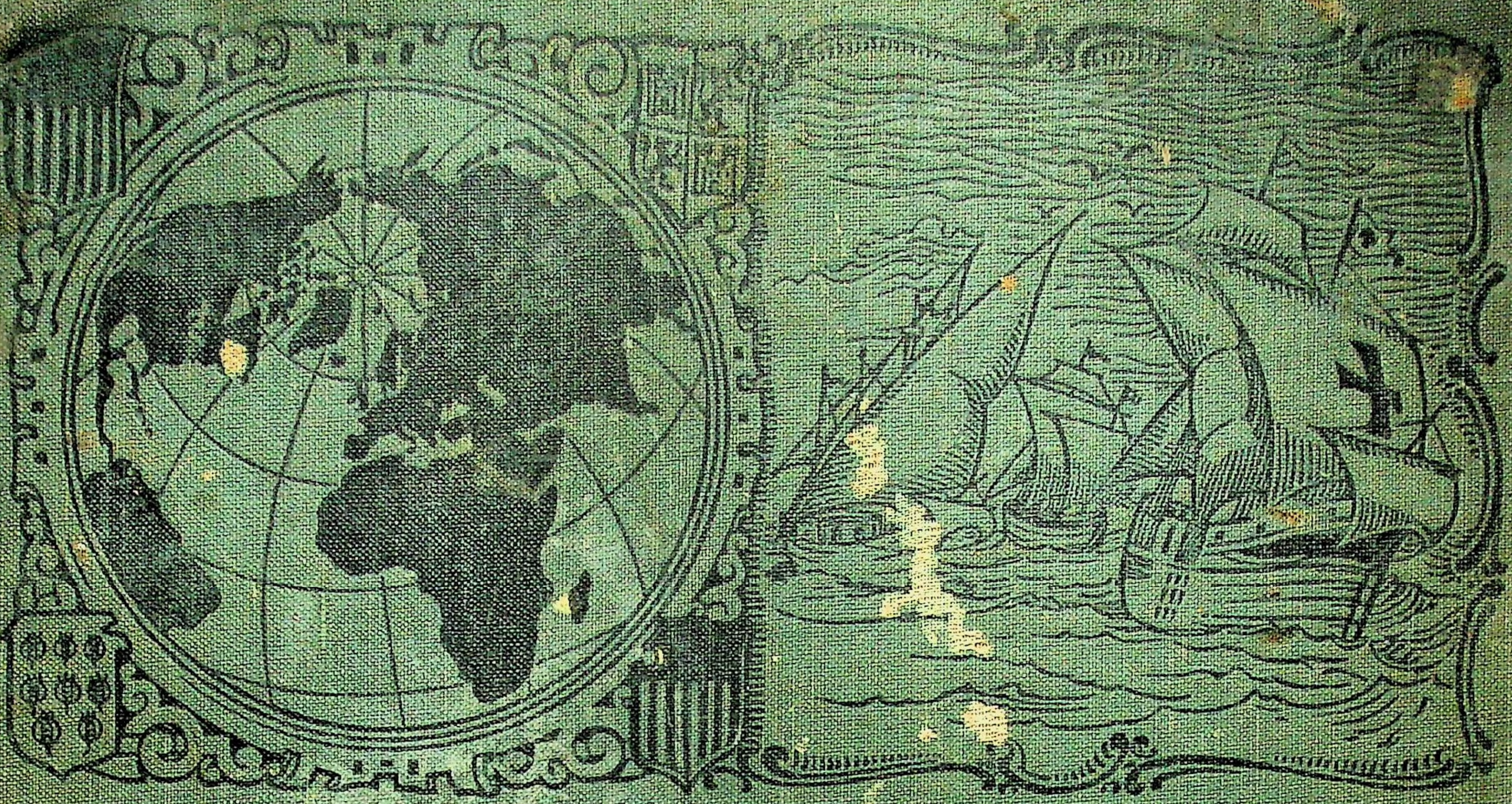

FRYE'S
HIGHER GEOGRAPHY

—GINN & COMPANY—

HIGHER

GEOGRAPHY

BY

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"ELEMENTS OF GEOGRAPHY," "HOME AND SCHOOL ATLAS," "TEACHERS'
MANUAL OF METHODS IN GEOGRAPHY," ETC.

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PREFACE

Geography. In this book **man** is the central thought. Every line of type, every picture, every map, has been prepared with a single purpose, namely, to present the *earth as the home of man,* — to describe and locate the natural features, climates and products that largely determine his industries and commerce, as well as his civic and other relations, — thus bringing REASON to bear on the work.

Commerce. A geography that seeks to lay a broad basis for the study of nations must throw a strong searchlight upon their commercial relations. Commerce and the related industries take a leading place in this book, — those of our own country being illustrated by many maps (*see pages 76–85*), the originals of which were prepared expressly for this series of Geographies.

Physical Features. The intelligent study of a country's resources must be based on its physical features and climate. For this reason the surface-forms and climate of the various parts of the world are fully treated in the text and pictures. Much care has also been given to the relief maps (*see pages 16 and 68–69*).

Illustrations. Nearly all the pictures in this book were engraved directly from photographs. To the selection and grouping of subjects for the photographs, the author has given fully as much time and care as to the text itself. The aim has been to present *characteristic* or *typical forms* that are educative.

Topics. The work is presented in *topics* in such order as will enable pupils to *reason from one step to another.* Pupils should find out what the text tells about each topic and should be able to state the leading facts, not in the words of the book, but in their *own language.* Teachers should question pupils upon topics.

Examinations should be based on **topics** *broad enough to test thought.*

Helps. Many questions are placed under the HELPS at the end of lessons to guide *pupils* in their study, by suggesting what parts of the text call for closest attention. The *topics,* however, afford a broader basis for recitation.

Unity. This book holds the *earth as the unit* before the mind and relates all study to that unit. *The memory is thus aided and much time is saved.*

Sizes of Type. The text which needs the most careful study is in large type. The descriptive matter in small type does not call for close study, but may be used for supplementary reading.

Spelling and Capitalization. In spelling and usage of geographic names, the maps and text follow the rulings of the *United States Board on Geographic Names.*

THE AUTHOR

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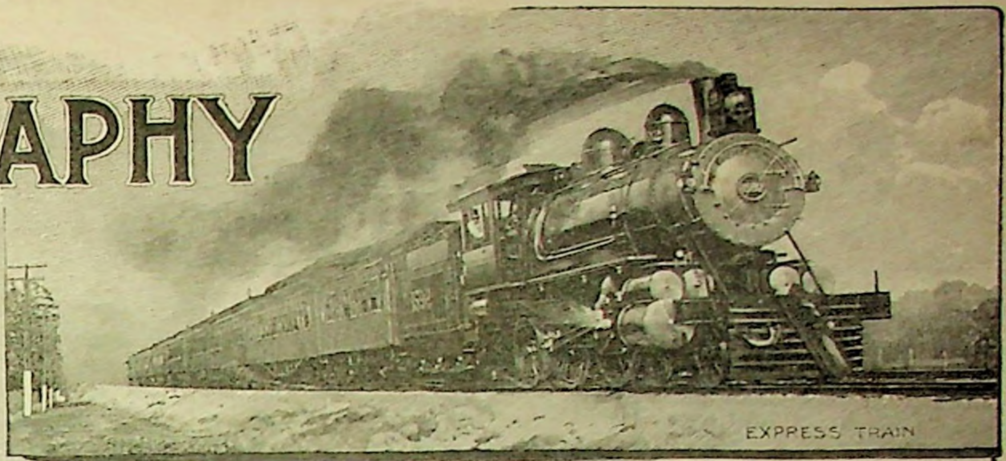
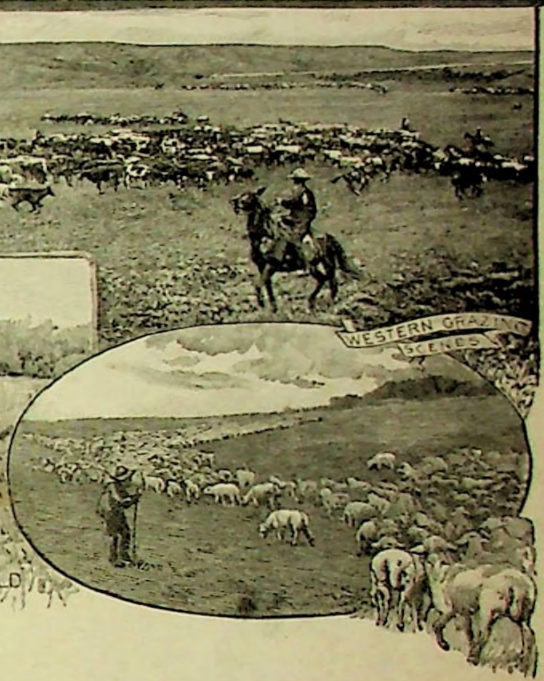
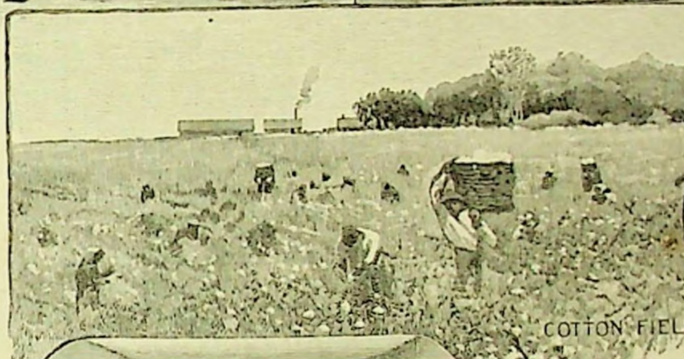


EXPRESS TRAIN

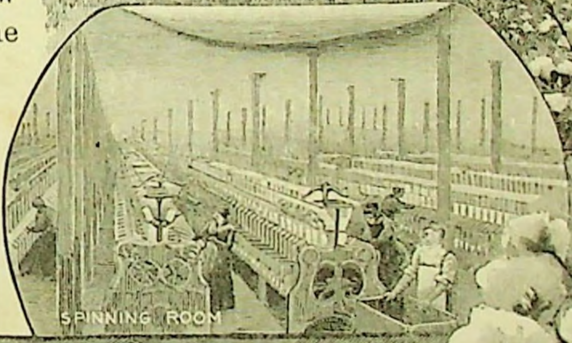
OCEAN STEAMSHIP



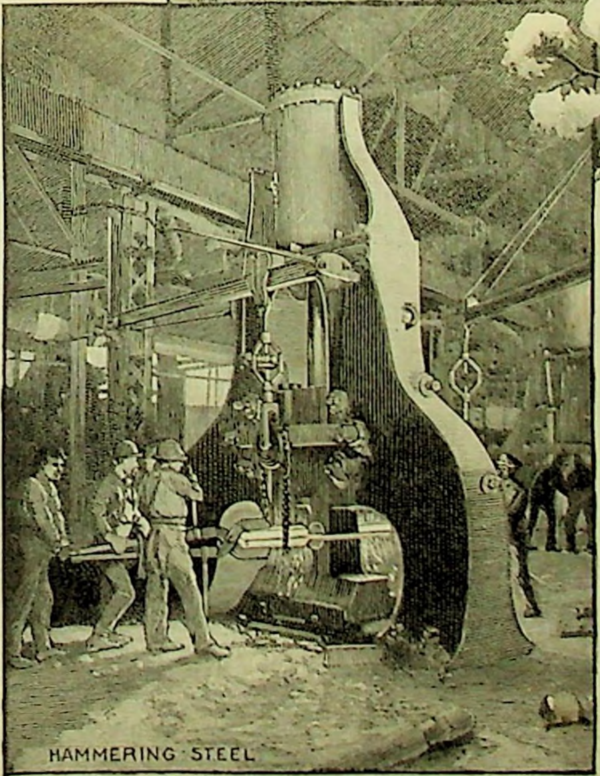
WESTERN GRAZING SCENES



COTTON FIELD



SPINNING ROOM



HAMMERING STEEL

INTRODUCTION

GEOGRAPHY

Geography is the study of the earth as the home of man.[1]

We cannot visit all parts of the earth, such as the wide snow fields of the far north, where the Eskimos hunt the white bear and the seal for food; the great forests into which men go to cut down trees for lumber; the broad grassy plains where herdsmen tend cattle and sheep; the fertile fields white with cotton or blue with flax; the far-off lands where people feed silkworms on mulberry leaves and where the worms spin their soft homes of silken fiber; the deep holes in the earth where miners dig coal or iron ore out of the beds of rock.

Nor can we visit all the great workshops and busy mills in large cities, where workmen carve and smooth the rough wood into beautiful furniture; or weave the fibers of cotton and silk into fine cloth; or melt the ore of the deep mines, change it to iron or steel and shape it into machinery and ships.

We may perhaps visit some of these, but we can see pictures of many more. We can also study maps and find out where people have built their cities, — whether in cold lands or in warm lands, on mountains or on plains, near the ocean or far inland, in deserts or in lands through which flow wide and deep rivers.

We can read about the busy workshops, the rushing streams that turn mill wheels, the fields that supply fibers for swift looms, the high mountains that help to make rain and snow fall from the clouds, the wide and deep oceans that carry steamships loaded with freight from port to port, the swift trains that speed from city to city. We can also read about famous galleries of paintings and statues.

All this is geography, — the study of the earth as the home of man.

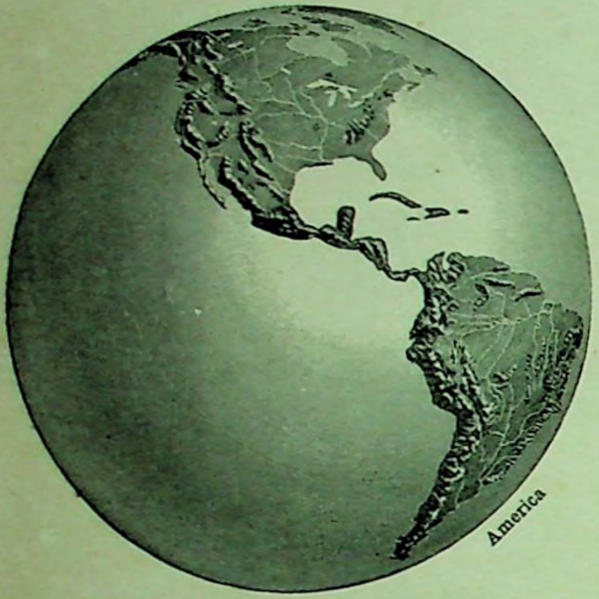
---

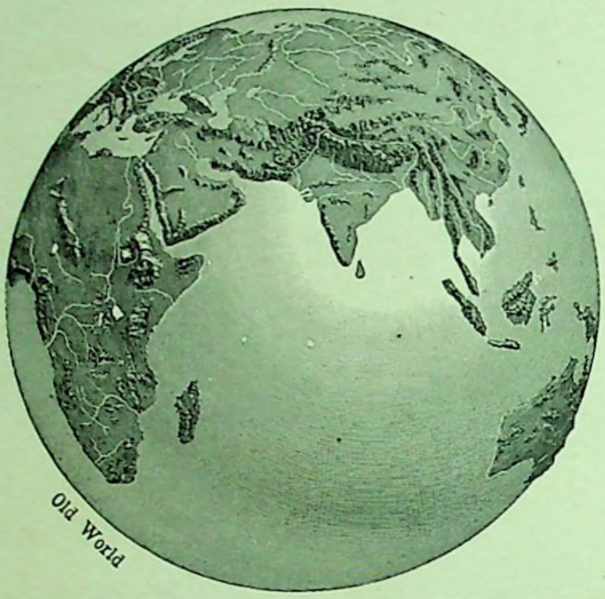
[1] To Teachers: — The preface of this book should be read very carefully by every teacher, especially the topics referring to sizes of type, spelling, etc.

1. Form and Size of the Earth

The earth is a great ball of land and water, with air around it on all sides.

The greater part of the land is rock, but a thin layer of the outside of the rock has crumbled into gravel, sand or finer soil.





There is solid rock everywhere under the soil and under all the waters of the earth, but in most places layers of fine mud have settled on the rock under the water.

Most of the plants that yield us food grow in the layer of soil over the rock. In some places the bare rock comes to the surface.

Nearly all deep mines are in firm rock, and here are found most of the coal, iron ore, copper, gold and other minerals useful to man.

Very deep mines show us that the inside of the earth, far below the surface, must be very hot. As such mines are dug deeper the heat increases.

It is believed that the earth was once much hotter than it is now, and that as it cooled it shrank away faster in some places than in others and thus made wrinkles like those on a withered apple. The higher wrinkles of the earth are now the land. Wide hollows between the wrinkles are filled with the salt water of the sea.

Rocks jutting out of the ocean

The surface of the land is not smooth, but has wide hollows or valleys in which the waters of the sea collect. Nearly three fourths of the surface of the earth are covered with water that lies in these broad valleys. The dry land consists of the higher parts that rise above the level of the water in the great valleys.

The little maps on this page show the two sides of the round earth. The dark rough parts are the land; the other parts are water. The maps do not show the lands that lie under the water.

We live on the land, but the great bodies of water also are very useful to man. They supply the water for rain, and they carry ships loaded with goods from seaport to seaport.

We see so small a part of the earth at a time that it does not look round, but there are many proofs that it has this form.

Here are a few of the proofs:

1. Many persons have gone round the earth.
2. The smoke of steamers at sea can be seen long before the hulls come in sight above the sky line, or *horizon*.
3. When travelers go day after day towards the north or the south new stars rise over the horizon before them, while the stars behind sink slowly out of sight.
4. Sometimes the earth moves between the sun and the moon and casts a shadow on the moon. The edge of this shadow always looks like part of a circle.

The sun and the moon are round, like the earth. The moon is smaller than the earth, but the sun is many times larger. The sun lights and warms the earth. The sun also lights the bright face of the moon, and the moon reflects some of the light to the earth.

The great round earth curves a little less on two opposite sides than on the other parts. Sometime perhaps you will learn how this slight change of form holds the earth in one position, as it turns round day after day, and thus enables us to see the sun, the moon and the stars in the same place in the sky each year.

The earth is one of many bodies, called *planets*, that move round the sun. The earth goes round the sun once a year.

The shadow of the earth on the moon is called an *eclipse of the moon*. Sometimes the moon moves between the earth and the sun and causes an *eclipse of the sun*, — that is, the moon shuts off a part or the whole of the sun from our sight.

The *diameter* of the earth, or the distance from side to side through the center, is nearly 8000 miles. The *circumference*, or greatest distance round the earth, is about 25,000 miles.

How many days would it take a train of cars, going at the rate of fifty miles an hour, to travel 25,000 miles? The earth is a very large home for man.

No one knows just how high the layer of air that surrounds the earth reaches, but there are proofs that it is over 500 miles above our heads. The high air is very thin, or *rare,* and at a very few miles from the surface of the earth we could not get air enough to breathe. The air near the earth is more *dense,* as it is pressed down by the weight of all the air above it.

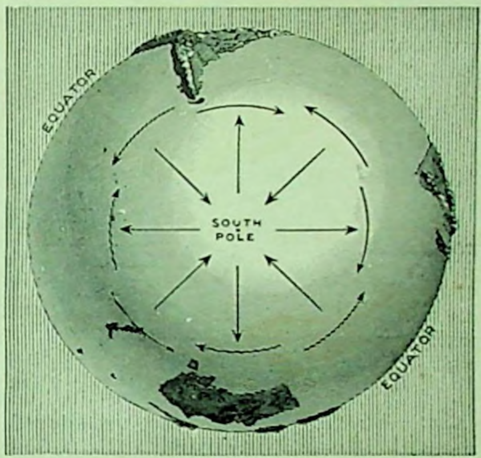
Helps: — What is the earth made of? What is its form? Why do we not see rocky part of earth everywhere? What is under all bodies of water? Name some useful minerals taken from earth. What do plants feed on? What do deep mines show about inside of earth?

How much of earth's surface is water? Where does water on the earth collect? Why does not water flow over whole earth?

Why does not earth look like ball? State some proofs that earth is round. What is form of sun and moon? Which is largest of these three bodies? What is an eclipse?

What is meant by word diameter? By circumference? What is diameter of earth? Circumference? Tell what the lesson teaches about the air. Can you name some of the uses of air?

Topics: — Earth's form; material of which the earth is made; inside of the earth; surface of earth; size of earth; sun and moon; eclipse; air.



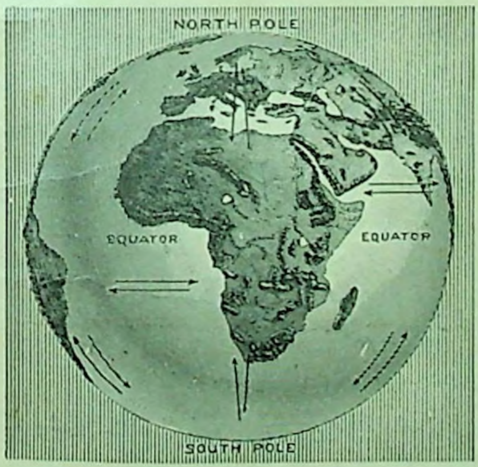
Map B

2. Directions on the Earth

The earth is always turning round like a spinning top, but the earth turns only once in twenty-four hours, or a day and a night. This spinning motion is called the *rotation* of the earth.

The sun lights and warms one half of the earth at a time.[1] As the earth *rotates,* some parts of it are turning into the sunlight while other parts are turning away from it into the dark. One side of the earth thus has day while the other side has night.

Bright daylight would be very tiresome if it lasted all the time, with no dark hours for rest and sleep. Endless night would be cold and dismal, with no sunshine to light and warm the earth.

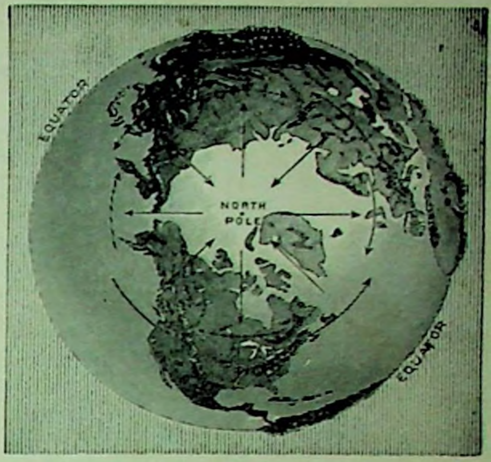


Map C

Far away in the north there is a point on the earth, known as the *north pole.* It is nearly under the north star, which is often called the *pole star.* Opposite the north pole, on the other side of the earth, there is a point called the *south pole.*

The word "pole" means *pivot,* or point on which anything turns. The earth does not rest on anything, but turns in space *as if* held by a line running through it from pole to pole. We can think of such a line and call it the *axis* of the earth. The poles are the ends of the axis.

After many attempts brave men have at last reached both poles in dreary regions where there is ice and snow all the year round.



Map A

North is the direction towards the north pole; south, towards the south pole. All lines that we may imagine running north on the earth meet at the north pole. All lines running south meet at the south pole.

East-and-west lines go round the earth in circles. The largest of these circles is midway between the poles and is called the *equator,* because it divides the earth into two *equal* parts. All east-and-west lines run parallel with the equator. When we face the north, east is along the lines to the right, and west to the left.

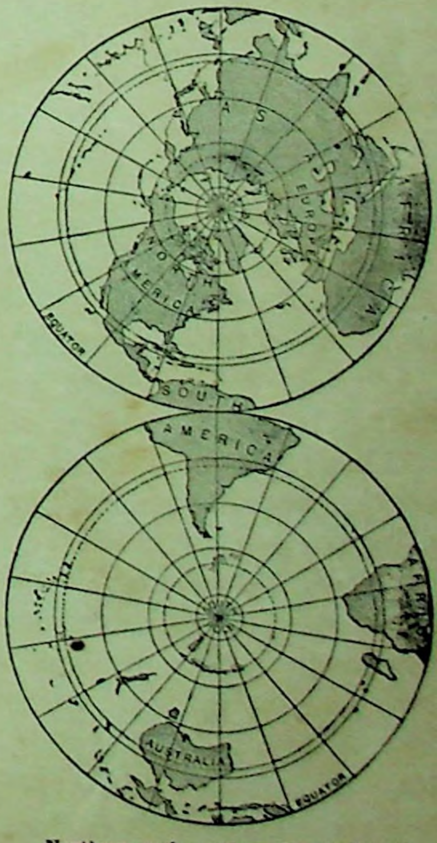
In most maps north is at the top and east to the right, but this is not true of all maps. If we remember that *north and south are the directions towards the poles,* while *east and west are parallel with the equator,* it will be easy to tell directions on all maps in this book.

How many arrows on map A point north? How many point south? Which arrows point north on map B? On map C?

Which arrows are flying south on map B? On map C?

How many arrows on map A point east? Which fly east on map B? On map C? Which arrows point west on map A? On map B? On map C?

Of course there are no real circles or lines to be seen running round the earth, but we can imagine such lines and name or number them. We shall find that these lines are very useful in helping to locate places on the globe, just as



Northern and southern hemispheres

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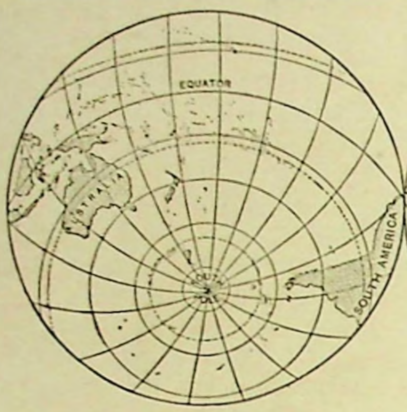
[1] To Teachers: — Strictly speaking, the light refracts and reflects slightly beyond the half of the earth, but this need not be taken into account in leading pupils towards the study of the zones of light and heat.

we locate houses in towns or cities, by naming streets and cross streets.

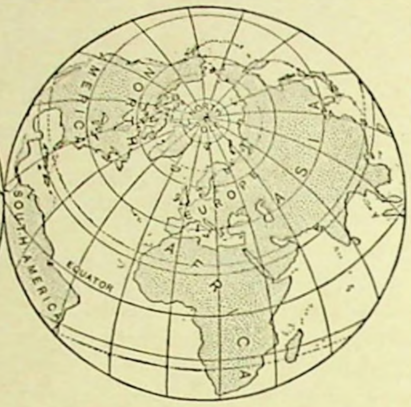
The equator is far south of us. If we were near it we could see the sun overhead, or nearly so, at noon every clear day. The lowlands near the equator have no winter; hot or warm weather lasts all the year. Snow and ice are not found in that part of the world, except on very high mountains.

Dense forests cover much of the land near the equator. Birds, insects and large animals abound. Most of the insects have bright colors, and many of the birds have beautiful plumage.

The earth rotates from west to east. That is why the sun seems to rise in the east,—the earth turns us towards the east.



Water hemisphere



Land hemisphere

The earth is a *globe* or *sphere*. One half the earth is a *hemisphere* (*hemi* means *half*). The equator divides the earth into a *northern hemisphere* and a *southern hemisphere*.

One of the little maps of hemispheres on this page shows the half of the earth having the most water; the other shows the half having the most land. In these maps north is not at the top, but is at the point where the north lines meet. South is at the point where the south lines meet.

How many lines on the map of the *land hemisphere* are drawn north and south? Which pole is not shown on this map? Why not?

By means of the sun or the stars, as well as by the *mariner's compass*, sailors can tell the direction in which they are going. Often the sun and stars are not in sight, and sailors have learned to depend mostly on the compass. Without this simple guide the task of steering vessels from port to port would be very difficult.

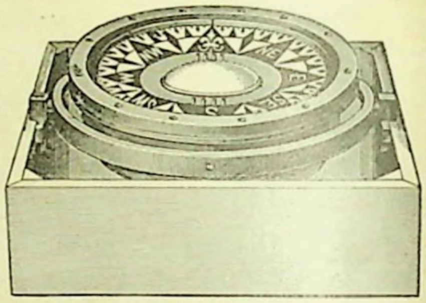
Here is a picture of the mariner's compass. Under its glass cover is a round card, naming the *points of the compass*,—north, south, east, west, northeast, etc. On the underside of the card is a steel magnet, in the form of a thick needle or bar, that swings on a pivot. The earth attracts this needle and makes it point almost north and south. In some places it points exactly north and south.[1]

Helps:—What is meant by rotation? How often does earth rotate? Explain cause of day and night.

What is axis of earth? Where are the poles? What is the equator? What is meant by north? By south? By east? By west? In order to tell directions on maps, what must we remember? What does lesson tell about lands near equator? In what direction does earth rotate?

What is a hemisphere? Describe mariner's compass.

Topics:—Rotation; day and night; axis and poles; equator; reading directions on maps; why sun rises in east; hemispheres; mariner's compass.



Mariner's compass

FORMS OF LAND AND WATER

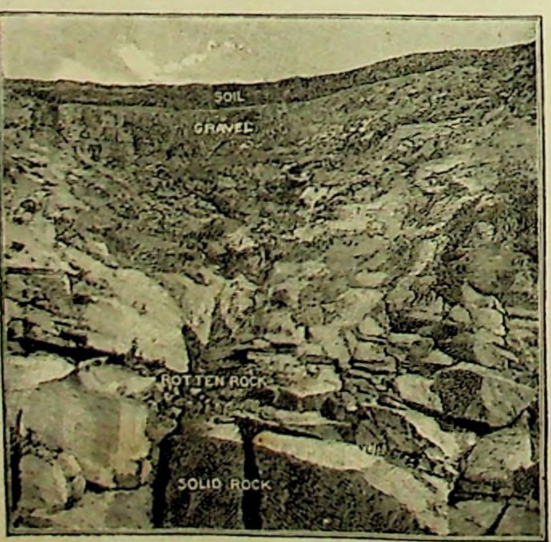
3. The Land and its Soil

As rocks change from cold to warm or from wet to dry, they slowly crumble or decay, just as nails and wood do, but many years may be needed to loosen only a few grains. Water freezing in cracks in rocks often splits them, just as freezing water bursts bottles or iron pipes.

Rolling stones in streams often strike together and knock off small pieces. The larger rolling rocks also pound upon and help to crush the smaller ones.

When rock has been ground to sand the little grains may blow about, strike together and crumble still finer.

Plants help to crumble the rocks. The hairlike roots creep down into tiny cracks in the rock, searching for food. As the roots grow larger they pry open the cracks and thus help to break the rocks.



Cliff showing how soil is formed

Since the firm rock wears or wastes away to form large boulders, little pebbles, fine sand and dust, we may call all these *rock waste*. When fine enough to support plants it is called *soil*.

The decay of rocks is slowly going on over all parts of the earth's surface where air and rain can reach them. In lands having much rain and frost, and also very hot and cold spells of weather, the rocks crumble more quickly.

Finely crumbled rock waste, mixed with decaying plant and animal matter, forms *topsoil*. This is also known by the simpler name of *soil*. The roots of most plants grow in the rich soil or topsoil.

Plants take up water and other kinds of food from the soil. If you will burn a piece of wood, the ashes will show you part of the food which the roots have taken up from the soil. When soil consists largely of good food for plants it is said to be rich or *fertile*.

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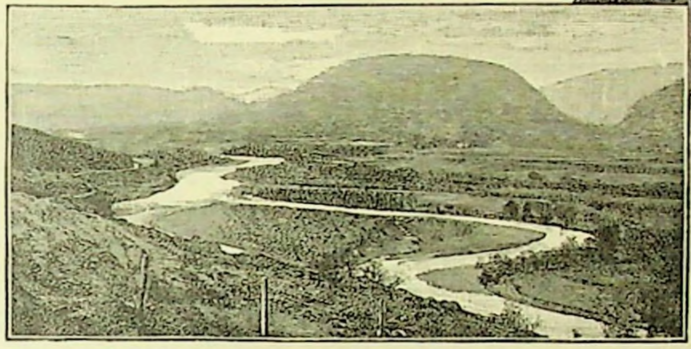
[1] To Teachers:—The needle does not point to the north pole, but in the general direction of the magnetic pole, which is now about latitude 70° N., longitude 96° W. *See map on page 65.*

Pupils should know how to find the points of the compass by midday shadows or by the north star. Doubtless this has been taught in the lower classes; if not, a brief oral lesson will suffice.

Each kind of rock makes soil different from that of other rocks; but each kind forms the best food for certain plants. Farmers try to find out what plants will grow best in the soil of their farms.

Most plants give back part of the food which they take from the soil. For example, many trees shed their leaves, and perhaps at last the trunks die and decay and mix with the soil. Countless grasses and weeds die in the fields. When grass and grain are cut the roots and stubble are left to die and help to enrich the soil, — often being plowed in by the farmers. If the soil were robbed of all this food, it would sooner or later yield only very poor crops.

Thus, year after year plants grow and decay, while myriads of insects and worms live and die in the fine rock waste. The remains of the plants, the insects, the worms and other creatures mingle with the fine rock waste to form the rich topsoil, or fertile soil.


A stream in dry weather

The soil has not the same depth everywhere. In some places there are more rains, more frost, more sunshine, more plants, than in others, to help form the soil. Some kinds of rocks decay more quickly than others.

Running water washes soil down the slopes. It takes it from steep slopes, where the water runs swiftly, and leaves it on the gentler slopes or the level land, over which it flows slowly.

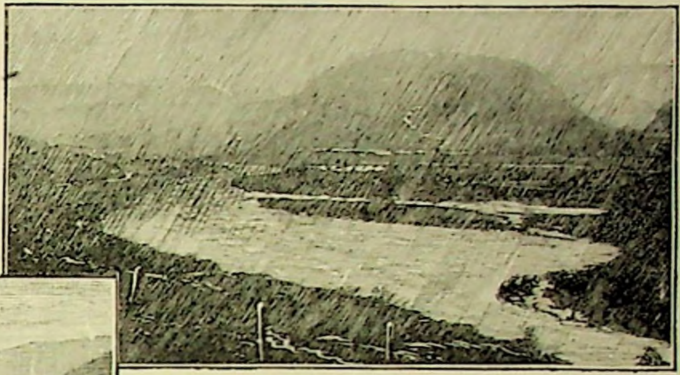
On steep hillsides much of the rainfall is shed quickly into streams, washing away some of the surface soil. The streams are thus filled with rapid currents of muddy water, and as they reach the valleys they often overflow their banks and spread the soil on the more level land.

On flat lands a large part of the rain sinks into the ground, instead of running away. If the soil is loose and sandy, almost all the rainfall sinks into it.

When the rain ceases and the sky clears some of the water which is then left on the ground rises in the form of vapor. The drying of the ground is quickened by winds and sunshine. Water that changes to vapor is said to *evaporate*. Rain water that stands till it evaporates does not help in washing soil down the slopes. The water that sinks into the ground does but little of that work. The rain water that runs off the surface washes away the greatest amount of soil.

On flat lands or gentle slopes the soil washes away very slowly and has time to crumble very fine to a great depth. There the rocks may decay for many feet below the surface, thus making plenty of soil for the roots of plants. In order to reach the firm rock, the soil must be dug away very deep, down to the place where the rain and frosts and heat cannot reach so freely.

The topsoil in valleys consists largely of fine waste that has washed from the higher land. Most of the water that sinks into the soil of hillsides also creeps down into the valleys and helps to keep the soil moist. For these reasons many of the best farms are in valleys or on level lands.


A stream in rainy weather

Helps: — What makes rocks decay? In what ways are rocks broken into pieces? How do plants help to crumble rocks? What is rock waste? What is soil, or topsoil? How can you show some of the food which plants take from soil? What is fertile soil? In what ways do plants give back part of food which they take from soil?

Why has not soil same depth everywhere? How is the soil carried about? On what kind of slopes do we generally find deepest soil, and why? What becomes of rain that falls? Which portion of rainfall washes away most soil?

Why is soil on level land often very deep? Where do valleys get large part of topsoil? Why are valleys or level lands generally best place for farms?

Topics: — Tell what you can about decay and crumbling of rocks; about soil; about food of plants; about depth of soil; about soil on slopes; about rain that falls on soil; about soil of valleys.

4. Rainfall and Springs

When moist air is cooled enough the moisture in it forms clouds that give out rain or snow. Part of the rain or melted snow soaks into the ground and is called *ground water*.

Ground water creeping slowly through the soil and loose rocks may travel many miles towards the lower land. It is this water that makes the soil of meadows wetter than that of hillsides.

River flooded by rains and melting snows

In some dry countries pipe wells are driven or sunk to reach a supply of ground water. These wells may be driven through layers of rock, beneath which the water is creeping. In some places the layers of rock cause the water beneath to flow long distances and then let it come to the surface.

Water coming from the ground through a crevice forms a *spring*.

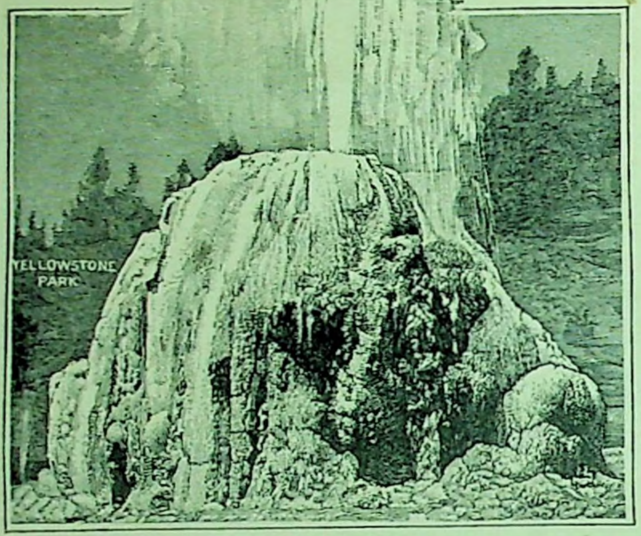
Many springs are found at the base of hills. Others appear along the banks of brooks or rivers. In many places the ground water rises in the beds of streams or lakes.

Surface water is often muddy, but nearly all ground water is clear, because it moves too slowly to carry even the finest rock waste. Spring water is therefore much better than surface water for drinking. Wells also are supplied by ground water.

Most springs flow so slowly that the supply of ground water from one rain lasts till rain again falls. Such springs flow in both rainy and fair weather. In long dry spells, or *drouths*, springs yield less and less water, or they may even cease to flow. The streams then become very low, or perhaps dry up. During long periods of dry weather trees may be kept alive by ground water which reaches their roots deep in the soil.

When soil is frozen, water cannot sink into it. In lands that have long freezing seasons plentiful rains are needed in autumn to give a good flow of water before the severe frosts harden the soil.

In winter, when the ground is frozen, the rain water and melting snow run quickly to the streams and often flood them. They then cut away their banks and wash the soil down their valleys, spreading it over the flooded lands or even carrying it to the sea. The flooded streams often carry down large blocks of ice and trunks of trees. These do much damage in breaking down bridges and clogging the beds of the streams.



A geyser in action

In some parts of the earth the ground water flows over or through beds of hot rock deeply buried. The water becomes very hot, and as it comes flowing towards the surface steam forms and blows columns of the hot water high into the air, forming *geysers*. If the hot water does not spout, but simply flows out in the form of a spring, it is called a *hot spring*. There are many geysers and hot springs in the western part of our country.

Helps: — What is ground water? Why are meadows wetter than hillsides? How is ground water deep under layers of rock often reached? What is a spring? Where are springs found? Why is surface water often muddy? Why is ground water clear? What supplies wells with water? Why do not all springs dry up during drouths? Why do streams become smaller at such times? What keeps trees alive in dry weather? In what lands are autumn rains much needed? What harm may rains do when ground is frozen? How are geysers formed? Hot springs?

Topics: — Tell what you have learned about ground water; springs; drinking water; rain and frozen soil; geysers and hot springs.

5. Lakes and Rivers

Lakes are bodies of water having land on all sides, except where streams flow into or out of them. *Ponds* are like small lakes.

Lakes are formed when streams flow into wide hollows in the land. If there is enough water to overflow the hollows, the streams will flow on. A stream flowing into the *head*, or upper part, of a lake is called an *inlet;* one flowing out at the *foot*, or lower part, is an *outlet*.

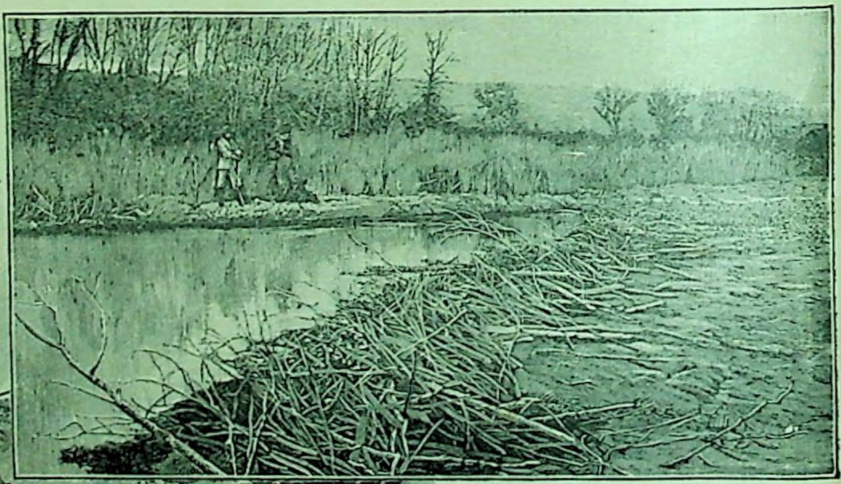
Some lakes are so large that thousands of ships sail on them from city to city, carrying freight and passengers.

In lesson 7 we shall learn some of the ways in which lakes have been formed. One of the pictures on this page shows a queer bank of branches built by little fur-bearing animals called *beavers*. This bank was built across a valley in which a brook flowed. The beavers wanted a pond in which to make their huts. Can you find out why they build in or near water?

There is salt in nearly all the soil on the earth, but in most places there is very little. Water creeping through the soil takes up some of the salt and carries it to the streams. Generally, there is not enough to taste in the water; but after a stream has been flowing for a long time into a lake that has no outlet, it may carry in enough salt to make a *salt lake*. If there is an outlet to carry off about as much water as enters the lake, the water is kept fresh.

In places where there is not enough rainfall to make the hollows in the land overflow, salt lakes are common. If such lakes then dry away, the hollows may be left coated with the salt.

Large streams of fresh water flowing over the land are called *rivers*. Small streams are *brooks*.[1]



A dam built by beavers across a valley in which a brook flowed

Some rivers start from springs; others flow from lakes, swamps or melting ice and snow. The beginning of a river is called its *head* or *source*.

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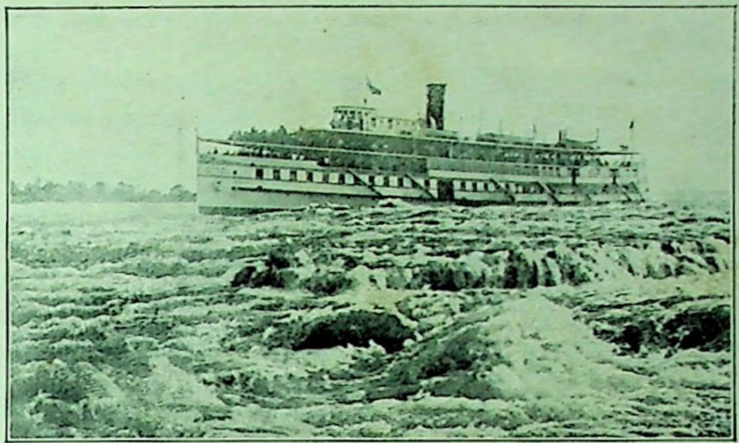
[1] In some parts of the United States small brooks are called *branches*, and large brooks *creeks*.

The long trough in which a river flows is its *bed*. Some parts of river beds are so steep that the water rushes swiftly along, forming *rapids*. If the water tumbles over a cliff, it forms a *waterfall*.

A small fall is a *cascade;* a large one is a *cataract*. On page 94 there is a picture of Niagara falls, one of the grandest waterfalls known in the world. We shall read more about this cataract later.



A steamer running downstream in rapids

Many cities are built near the banks of rivers. *See picture, page 8.* If the water flows swiftly, in rapids or falls, it may be used to turn mill wheels. If the rivers are deep, steamers and other vessels may go up and down with freight for the people that live along the banks.

The water in a river is the surplus rainfall that the ground and the plants do not use. It runs down the sloping land and may enter a lake or the sea. The lower end of a river, where it flows into the sea or into some other body of water, is the *mouth* of the river.

The lower parts of most large rivers on gentle slopes are slow and deep. Ships can enter the mouths of many of them and carry freight far inland. Some of the largest cities in the world are built near the mouths of rivers. These cities carry on trade with one another across the sea and also collect and distribute goods for the people living along the rivers or far inland.

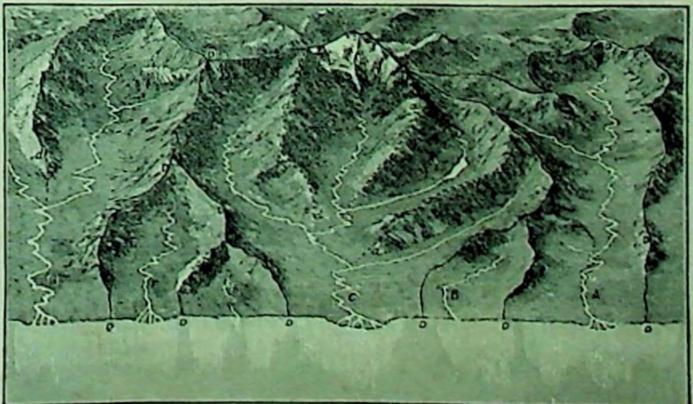
A chain of lakes

The deep parts of rivers, where steamers or other vessels may go from place to place, are said to be *navigable*. Some rivers are navigable for many hundred miles from the sea.

A river and all its branches form a *river system*. The largest or longest stream in the system is called the *main* river, and generally gives its name to the entire system.

How many river systems are shown in the picture marked (A) on this page?

Some of the longest rivers of the earth are three or four thousand miles in length, from source to mouth. On their way to the sea they receive many *branch* streams, called *tributaries*. Such rivers grow larger as they flow onward.



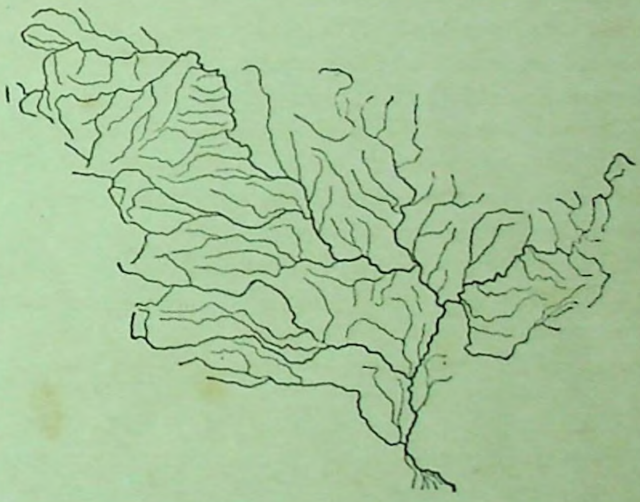
(A) River systems and river basins

All the land which sheds water into a single river system forms a *river basin*. The basin generally takes the same name as the main river of the system. A river system drains all the land which forms its basin.

How many river basins are shown in picture (A) on this page? Find the line which bounds the basin marked C. This line runs along the top of the ridges and separates the slopes of the basin C from those of the basins which adjoin it.

The line which divides one river basin from another is called a *divide* or *water parting*. It is the line which parts the raindrops from one another, turning them into different basins.

Divides may be on high land or on low land. Some of the most important divides on the earth cross wide plains whose slopes are too gentle for the eye to detect.



Mississippi river system

Helps:—What is a lake? How are some lakes formed? What is meant by inlet? By outlet? How are salt lakes formed?

What is a river? A brook? What is meant by source of a river? Name some sources of rivers. What is a river bed? How does a cataract differ from a cascade?

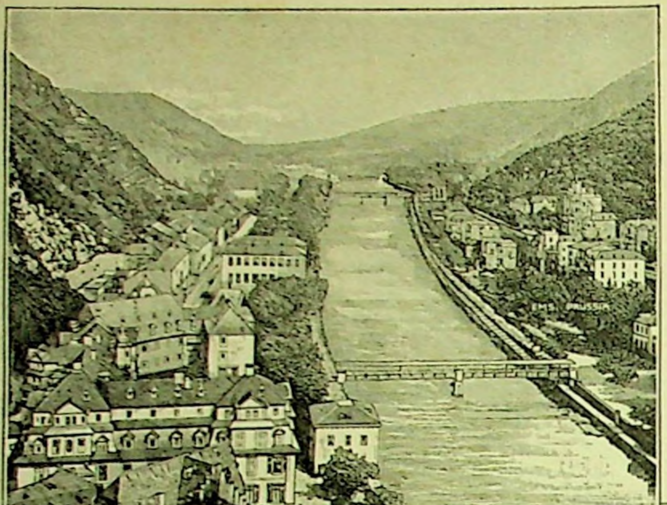
Why do some rivers grow larger as they flow towards sea? Why are large cities often built near rivers? What use do people make of rivers? What is meant by mouth of river? Why are large cities sometimes built near mouths of deep rivers?

What is a river system? What are tributaries? What is a river basin? What is a divide?

Topics:—Lakes; how some lakes are formed; parts of lakes; salt lakes; rivers; parts of rivers; some uses of rivers; cities near rivers; how a river system differs from a river basin; tributaries; divides.

6. Plains

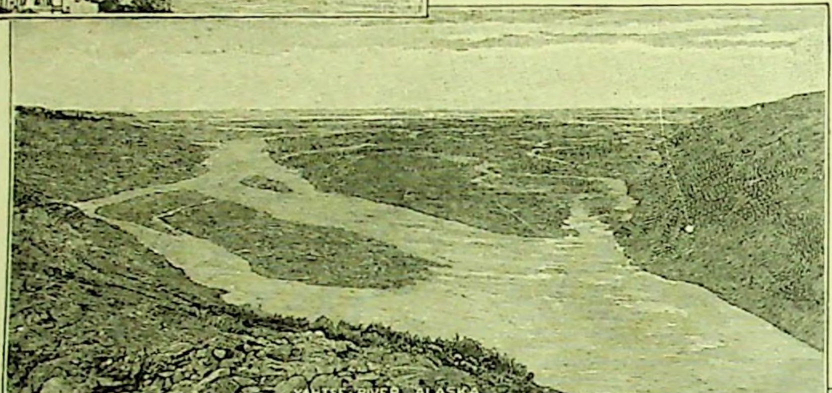
After heavy rains, or after much snow has quickly melted, rivers may overflow their banks and spread over flat meadows. Flooded rivers are very muddy, for they not only cut their own banks, but their swollen branches also bring them muddy water.



City on a flood plain

As the water spreads over the meadows it moves more slowly than in its narrower channel, and some of the mud settles on the meadows. When the flood is over, this mud, or *silt*, supplies fresh food to plants.

Meadow lands that receive soil from swollen streams are called *flood plains*. In broad valleys the flood plains may be several miles wide.



Delta in a river mouth (looking downstream)

Many cities are built on flood plains, not only because they are so fertile, but also to be near the rivers. Banks or walls are built to prevent floods, but the rivers may overflow the banks and rise into the streets of the cities, doing much damage. In dry countries these plains are the best place for people to settle, as the water can easily be led in canals and ditches to the farms.

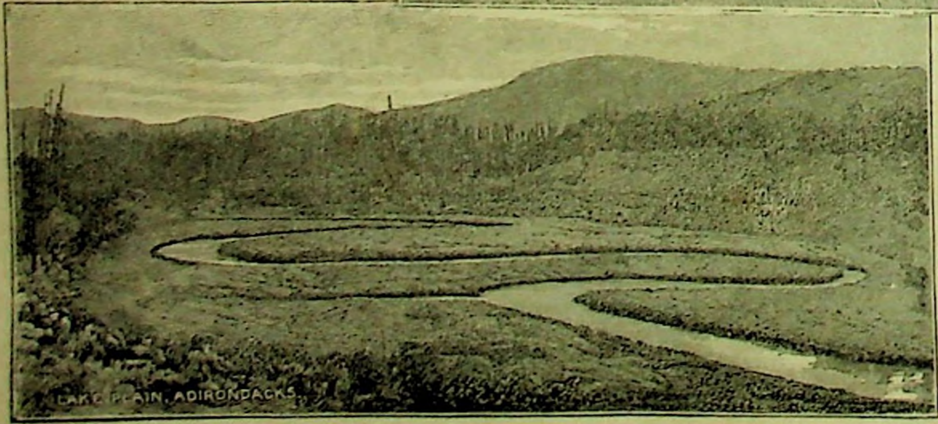
A large part of the fine mud in rivers is carried down to the sea. Much of it may settle near the river mouths, where the water flows slowly into the sea. The *sediment* forms low and flat plains in which the rivers may divide into branches, as shown by one of the pictures on this page.

Plains built of sediment at the mouths of streams are called *deltas*. Many deltas are the lower ends of the meadows or flood plains built out into the sea. The soil of delta plains is generally fine and fertile. Most deltas consist in part of many low islands.

THE PINES, N.J.

Pines growing on a sandy coastal plain

A lake once stood where these cattle are grazing



A lake once covered the bottom of this valley. The stream cut down the rim and drained the lake

Not all rivers make deltas. Strong currents in the sea may carry away the mud as fast as the rivers bring it down. Some of the largest cities are on deltas. They carry on trade between the rich delta lands and other parts of the world.

Many parts of the land were once under the shallow water of the ocean border. They were slowly raised from beneath the sea and became dry land.

The sea-bottom near most shores is slowly made smooth by layers of sediment washed from the land. When evenly uplifted the smooth bottoms form plains having very gentle slopes. In the soil of some of these plains are found myriads of shells that belong in the ocean, and that have not yet had time to fade and lose their beautiful colors since the sea-bottom came up to form dry land; but most of these plains are very old.

A plain that was once part of the sea-bottom and that is now near the coast is called a *coastal plain*.

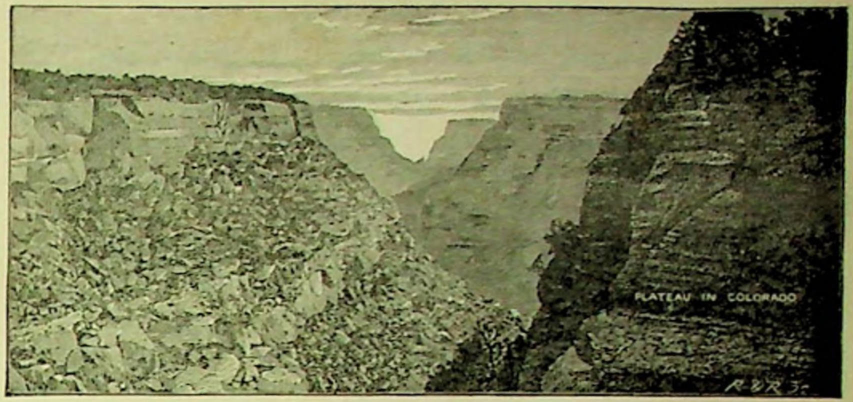
The coastal plain shown in the middle picture on this page is part of a great plain in our own country. It covers many thousand square miles. If the land shown in the smaller of the two pictures near the bottom of page 12 were to rise, the sea-bottom might form a coastal plain like the one in the picture beside it.

Rivers flowing into a lake may carry much muddy water. The fine mud settles on the bottom and makes it more and more level. If in time the water of the lake is drained away, the smooth bottom becomes a dry plain. Some of the most fertile plains in the world were formed in this way.

A plain that was once the bottom of a lake is called a *lake plain.*

One of the pictures on page 8 shows a small lake plain, with a stream winding across it. Some lake plains cover thousands of square miles. Their soil is very fine and fertile. The cattle, shown in one of the pictures on page 8, are grazing on a very fertile lake plain in our own country.

Plains that stand high above sea level are called *plateaus.* Most of the rocky layers in plateaus were made very long ago beneath the sea. Streams wear deep valleys in high plateaus.



Deep valleys cut in a plateau

Helps: — When do rivers overflow their banks? Why are flooded rivers muddy? Why does mud settle on overflowed meadows? What is a flood plain? Why are cities built on flood plains? Why does mud settle round some river mouths? Why does it not settle round all? Why are cities built on deltas?

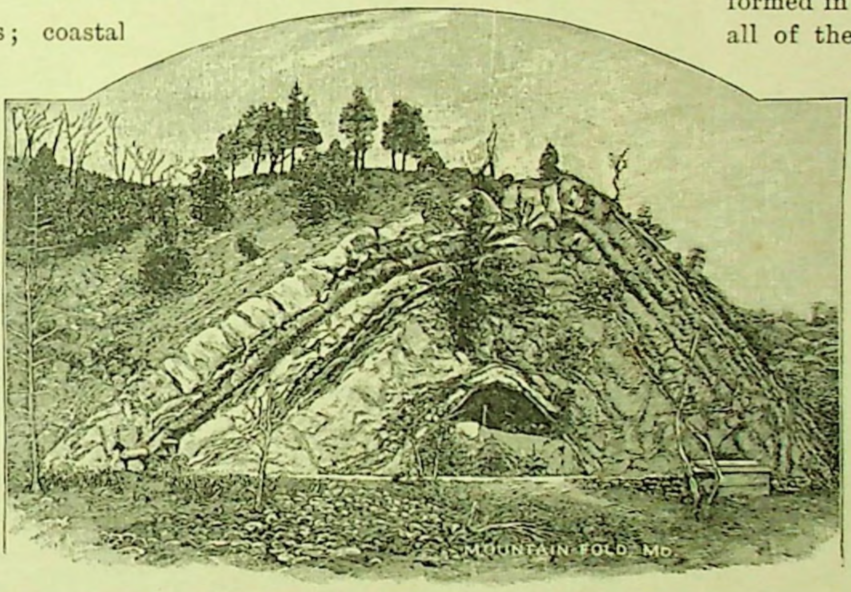
How do we know that some plains were once part of sea-bottom? What makes the sea-bottom smooth? What is a coastal plain? Where does mud on the bottom of lakes come from? How are lake plains formed? What is a plateau? What is difference between a plateau and a plain?

Topics: — Flood plains; deltas; coastal plains; lake plains; plateaus; valleys in plateaus.

7. Mountains and Valleys

A rugged part of the earth's surface, rising high above the surrounding country, is a *mountain.* A *hill* is like a mountain in form, but generally not so high.

A low place or hollow in the land may be called a *valley.*


MOUNTAIN FOLD, MD.

Mountain formed of rocks bent into an arch

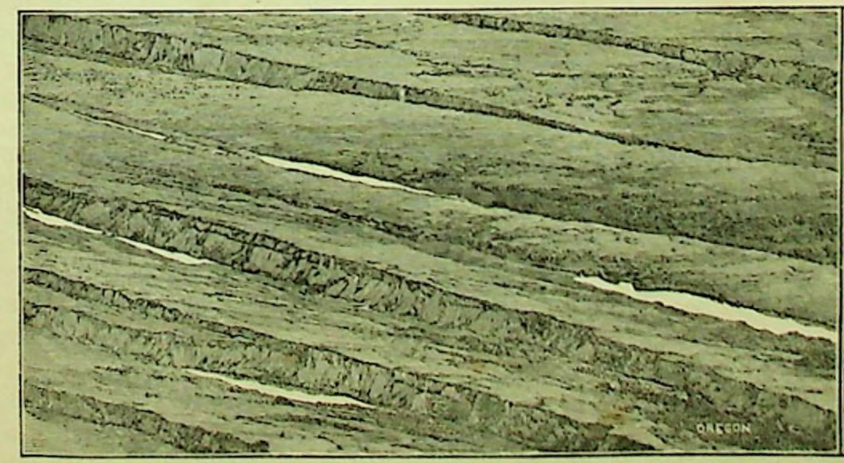
In some places plains made of rock have been cracked and broken into long wide blocks, looking somewhat like broken blocks of ice in a pond or stream; but the blocks of rock have been tilted up in the form of high ridges, as shown in picture (A) on this page. Such ridges are one kind of mountain. You can see by the picture that these mountains were not made long enough ago for the rain to cut deep valleys in the cliffs. After a long time the rain and streams may wear many side valleys in the bluffs, cutting them into rows of parallel ridges, as shown in picture (B).

The low places between the ridges are valleys. In some of these valleys there are streams and lakes.

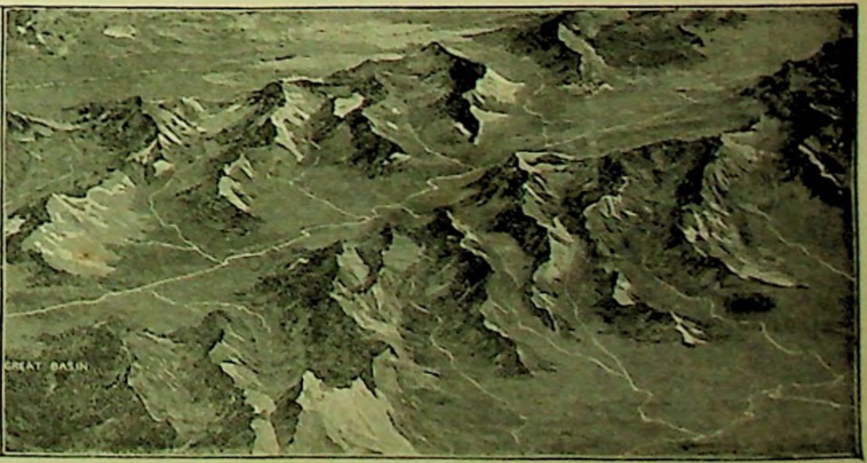
Some mountains are made of layers of rock that have been bent into folds or arches, as shown in the middle picture on this page. Most of the mountains in the eastern part of our country were formed in this way, but the forms of nearly all of them have been greatly changed by running water. Layers of rock rich in iron ore and coal are found in these folds and are a source of wealth to the people who own the mines.

The hollows or troughs between such folds are valleys. Sometimes the folds rise very slowly across the path of rivers and thus hold back the water, making lakes.

In many parts of the earth great masses of land have been slowly lifted up far above the level of the sea. During long ages the rocks have crumbled and the streams have cut deep valleys in the surface (*see picture at top of this page*), just as you have seen the tiny streams cut into soft ground, making valleys with ridges between them. After working a long time, the rain, rivers and ice on very high lands may carve great ridges and peaks called *mountains,* some looking like those in the picture at the top of page 10. Many mountains are formed in this way, by the wearing of deep valleys in highlands.



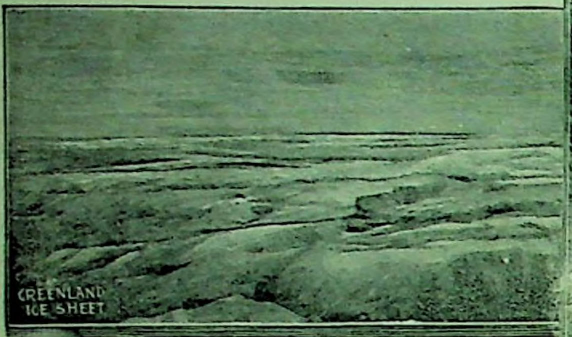
(A) Mountains formed of blocks of rock broken and tilted up

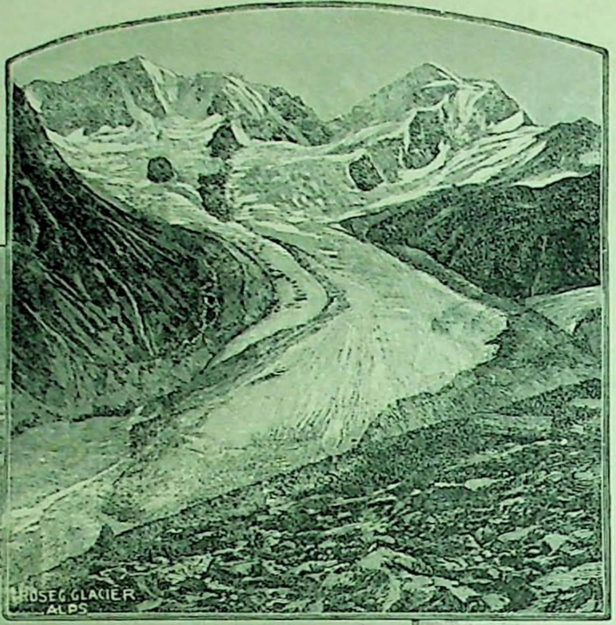


(B) Blocks formed like those in the cut at the left, but now deeply worn by streams making valleys across them

While lands are being slowly uplifted to form highlands, the rocks may break and slip, making the earth tremble for many miles around. The trembling is an *earthquake*.

There were probably many earthquakes when the blocks of rock shown in picture (A) on page 9 were broken and pushed up. Another cause of earthquakes is given in the next lesson.





ROCKS SMOOTHED BY ICE ACTION

A hill of gravel rounded by ice

A high and rugged ridge, or several such ridges near one another, may be called a *mountain range*. Some ranges are thousands of miles long.

A number of ranges having the same general direction in one great highland form a *mountain system*.

There are many long ranges of mountains in the western part of our country, and they all form one great mountain system. *See map on page 62.* This mountain region was very unevenly uplifted, and some parts were formed long ages before others. Rain and ice and streams have long been at work wearing down the high land. It is so greatly worn away that beds of rock once deeply buried are now at the surface. It is in such deep layers of rock that gold and silver are formed.

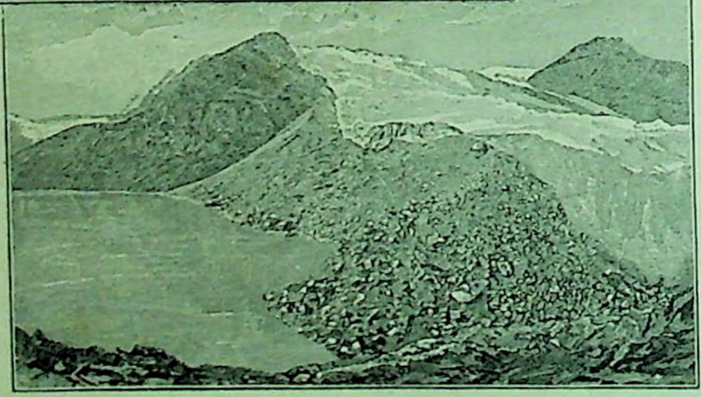
High mountains reach into the upper air, which is cold even when the air in low valleys not many miles away is very warm.

On the lofty peaks, three miles or more above sea level, the air is so thin, or rare, that many persons find it difficult to breathe there. Why is the lower air more dense? *See lesson 1.*

Winds blow freely around high mountains, and clouds form quickly in the cooled air as it rises over the ranges. When the air is cooled enough it gives out snow or rain. Snow often falls on the mountains while rain is falling in the lower valleys near by.

On some high mountains snow lies all the year and becomes very deep. Part of the snow melts, but all the snow of one storm cannot melt before more falls. Rain soaks into the snow, making it more compact, and the heavy mass slowly changes into ice. As the layers of ice grow thicker they creep down the slopes. When the ice enters the lower valleys it melts and forms brooks or rivers.

A body of ice slowly moving down a slope is called a *glacier*.


This glacier has brought down gravel and blocked a valley with it, causing a lake to form

Glaciers carry down whatever rolls upon them from the higher ground. They also drag along stones, gravel, sand and clay beneath the ice, — scraping the surface over which they creep. When the ice melts it leaves the coarse rock waste near the melting ends, but most of the finer waste is carried away by the glacier streams. If the coarse waste is left as a dam across a valley, as shown in the lower picture on this page, a lake may be formed. Most of the lakes in the northern part of our country were formed in this way by an ancient glacier or ice sheet, of which we shall learn more in later lessons.

When glaciers push their way into the ocean huge blocks of ice, called *icebergs*, break off and float away.

Icebergs chill the damp air around them and thus cause thick clouds to form over the sea. Clouds floating close to the sea or the land are known as *fog*. Many vessels have struck large blocks of floating ice in dense fogs and have been sunk or partly wrecked.

Helps: — What is a mountain? A hill? A valley? Describe three ways in which mountains are made. State one cause of earthquakes.

What is a mountain range? Mountain system? State three ways in which valleys are formed.

What does text teach about air on high peaks? About wind and rain there? What is a glacier? How are glaciers formed? Name one kind of work done by glaciers. What are icebergs and how formed? What causes fog? This lesson describes three ways in which lakes are formed; what are they?

Topics: — How mountains differ from valleys; how mountains are made; how valleys are made; earthquakes; mountain range and system; upper air; wind and rain or snow on mountains; glaciers; icebergs; fog; three ways of forming lakes.

8. Volcanoes

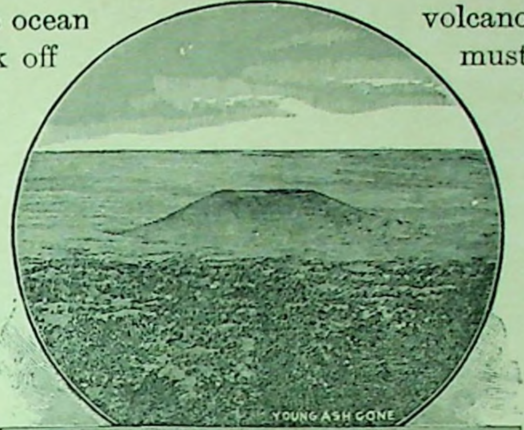
In many parts of the world melted rock, or *lava*, has been pushed up through cracks in the surface rocks and has cooled in great cone-shaped heaps or in broad sheets. In some places this work is still going on.

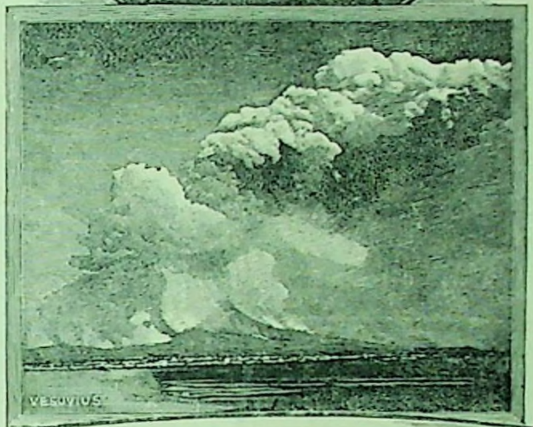
Steam and other gases sometimes burst forth with the lava, shaking the ground and thus causing *earthquakes*. The lava is then blown into fragments called *ashes*, or even into fine dust that may be carried many miles by the wind. Most of the great cone-shaped heaps of ashes and lava have hollows, called *craters*, in their tops, where the gases and ashes were blown out. Lava often escapes through cracks in the sides of the cones, as well as from the craters.

Some old craters are so large that they are called *valleys*. Rain water may collect in them and form very deep and broad lakes.

Each of these cone-shaped masses of lava and ashes is a *volcano*. It may be no larger than a hill, or it may be two or three miles in height. Many mountains are old volcanoes.

The bursting forth of the lava or ashes from a volcano is called an *eruption*. Many eruptions must take place to build up a great cone.


YOUNG ASH CONE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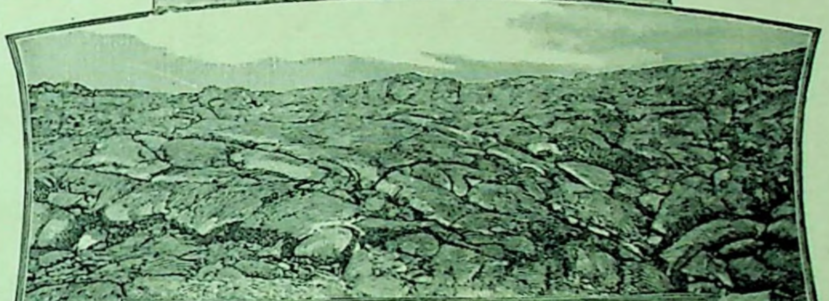
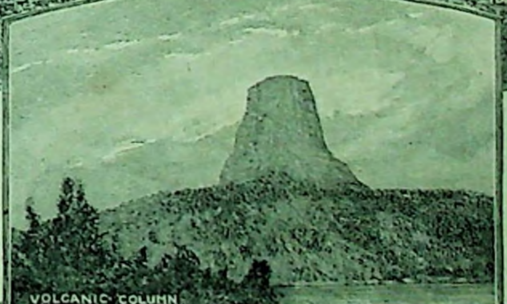
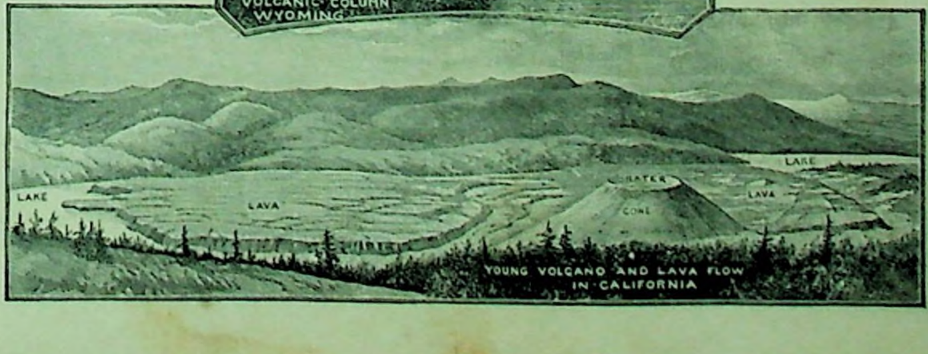

LAVA FLOW 1880

LAVA PLAIN IDAHO


VOLCANIC COLUMN WYOMING



YOUNG VOLCANO AND LAVA FLOW IN CALIFORNIA

The molten rock from volcanoes sometimes spreads out in wide plains. In some places the lava has poured through long cracks in the earth's surface and has formed plains that cover many thousand square miles.

A plain formed of lava is called a *lava plain*.

The pictures on this page teach many facts about volcanoes. At the top we see a young cone of ashes, just forming; below is a volcano in eruption, sending out lava, gases and ashes; the third picture shows how a fresh flow of lava may look; the fourth is a lava plain so old that the lava has begun to crumble and furnish soil for bushes; the fifth shows the old age of a volcano, when all the cone has been torn down by the action of the weather and rains, leaving only the hard core or neck of lava that once filled the crater; even this neck of lava must in time crumble away; the lowest view shows a small volcano, with a flow of lava making a dam across a valley and thus causing lakes to form.

Sometimes volcanoes form under the sea and push their cones far above the surface. Many islands have been built up in this way. They are known as *volcanic islands*.

Helps: — What is a volcano? How is it formed? State two causes of earthquakes. *See lessons 7 and 8.* What is meant by volcanic ashes? What is a crater? Define eruption. How are lava plains formed? Describe the pictures on this page. How are volcanic islands formed?

Topics: — Lava; earthquakes; crater; how volcanoes are formed; eruption; lava plains; what the pictures teach; volcanic islands.

9. Waves and Tides

Winds blowing over the sea make *waves*. When the winds are very strong the waves may rise thirty or forty feet high, from trough to crest.

If a hanging rope is struck or shaken, wave-forms glide along it. The rope simply bends to form the waves.

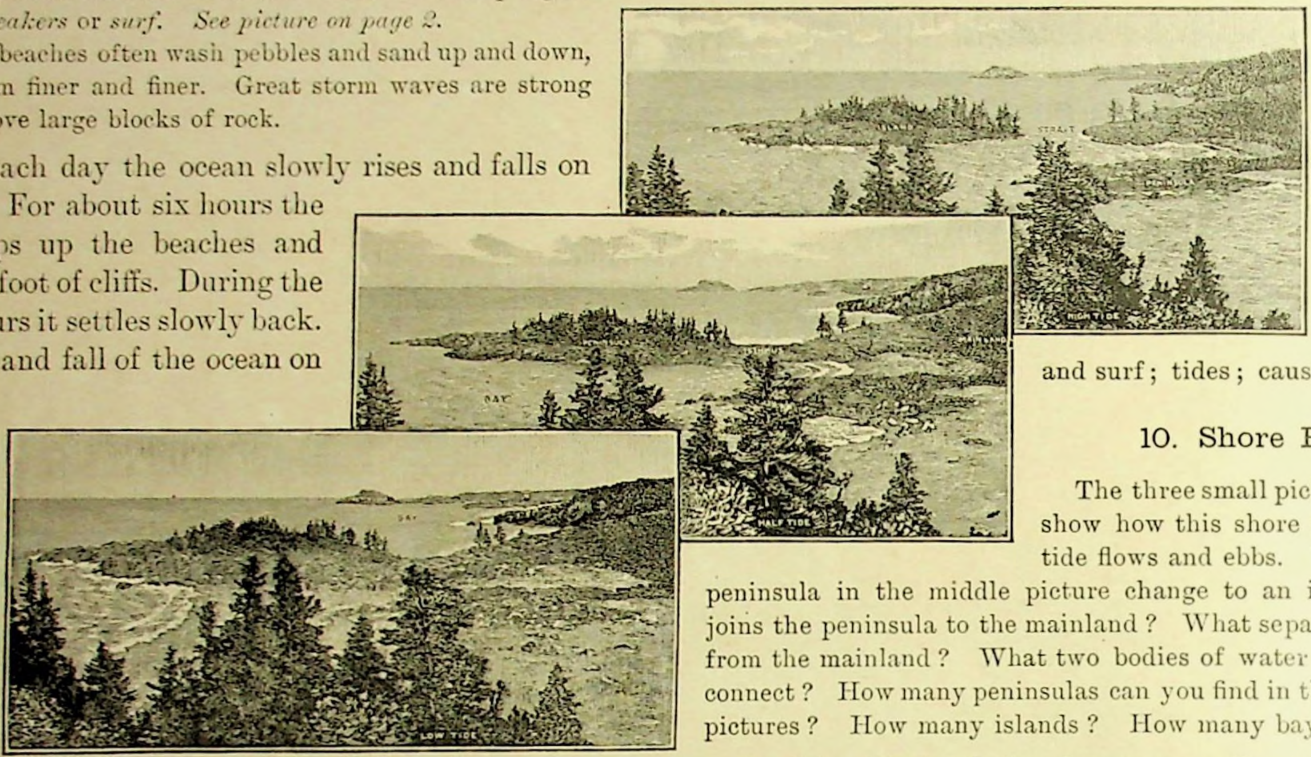
The water in waves only rises and falls, like the waves in the rope, but the *wave-forms* travel forward. The larger they are the faster they travel. Storms at sea are dangerous chiefly on account of the waves. They pitch vessels about and sometimes wreck them.

The great waves produced in a storm may spread far across the ocean. They lose height as they go, and are called *swell.* When the swell approaches shallow water near shores it rolls up higher and forms *breakers* or *surf. See picture on page 2.*

Waves on beaches often wash pebbles and sand up and down, grinding them finer and finer. Great storm waves are strong enough to move large blocks of rock.

Twice[1] each day the ocean slowly rises and falls on its shores. For about six hours the water creeps up the beaches and against the foot of cliffs. During the next six hours it settles slowly back.

This rise and fall of the ocean on its shores is called the *tide.* The flowing-in of the tide is called its *flood;* the flowing-out its *ebb.*



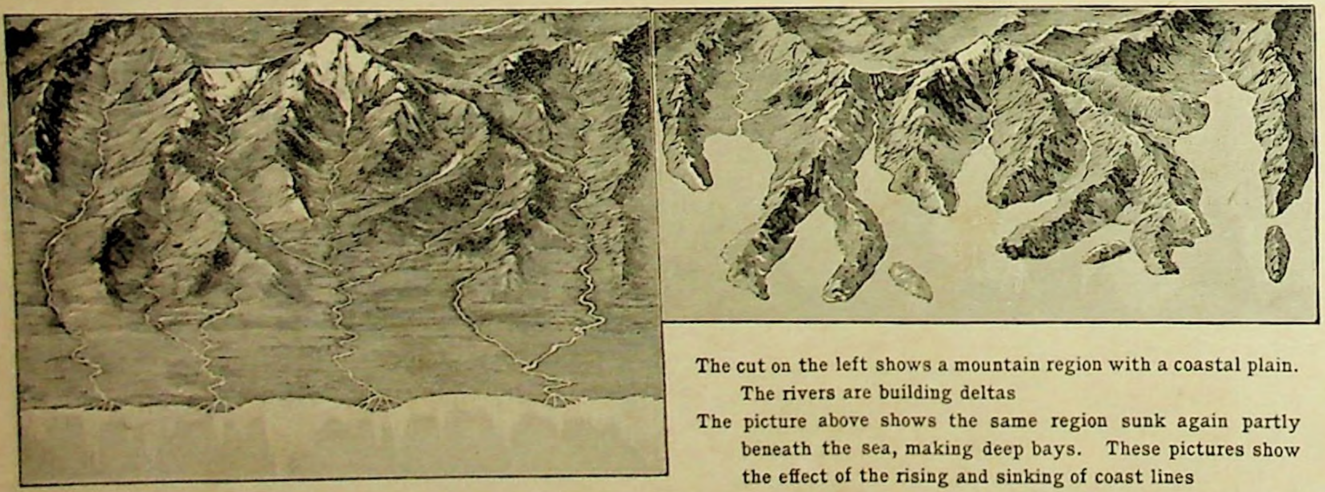
Three stages of the tide

The tides carry pure water into most harbors and help to keep them clean. The moving water scours and washes the harbors. Most harbors are thus cleansed twice a day.

In some places the tide in the form of a high wave flows upstream in rivers, overturning boats and cutting the river banks.

The tide is not felt far out at sea, and it seldom rises very high on headlands; but in V-shaped bays the water may rise ten, twenty, thirty feet or more.

The tides are caused chiefly by the attraction of the moon. There is a tide on the side of the earth towards the moon, and another on the opposite side.



The cut on the left shows a mountain region with a coastal plain. The rivers are building deltas

The picture above shows the same region sunk again partly beneath the sea, making deep bays. These pictures show the effect of the rising and sinking of coast lines

In the open ocean the tide, in the form of a very low wave thousands of miles wide, follows the moon; but on reaching the shallow waters near the shore, the tide is held back by the rubbing or friction of the water on the bottom. The tide then grows in height but lags behind the moon.

Helps: — What makes waves at sea? What is a wave? Why are waves dangerous? What is swell? Surf? What is meant by the tide? What causes tides? Define flood; ebb. How long does it take tide to flow in? What causes tides? Tell all you know about tides.

Topics: — Waves; swell and surf; tides; cause of tides.

10. Shore Forms

The three small pictures at the left show how this shore changes as the tide flows and ebbs. When does the peninsula in the middle picture change to an island? What joins the peninsula to the mainland? What separates the island from the mainland? What two bodies of water does the strait connect? How many peninsulas can you find in these three little pictures? How many islands? How many bays?

An *island* is land that has water all around it.

The word *peninsula* means *almost an island.* A neck of land joining a peninsula with another body of land is an *isthmus.* An isthmus may be many miles wide, but it is narrower than the two bodies of land which it unites.

A *strait* is a body of water joining two larger bodies of water. Some straits are many miles wide; others are only a few feet in width. The word *strait* means *narrow;* a strait is narrower than the bodies of water that it connects.

Some long and shallow straits are called *sounds.* This name may also be given to any body of water partly inclosed by islands.

Large arms of the sea are called *bays, gulfs* or *seas.* Some of these are hundreds of miles long and wide.

Any body of water that affords shelter to vessels is known as a *harbor.* Many fine harbors are found in the mouths of rivers and in bays formed by the sinking of valleys.

Good harbors must be of such form as to shut out great storm waves. The water must be so deep that vessels will not strike on the bottom, but not too deep for letting down anchors to hold the vessels. The deep water should extend close to the shore or to the wharves, so that vessels can easily take on or put off freight. The best harbors have high land round them, to shut out gales.

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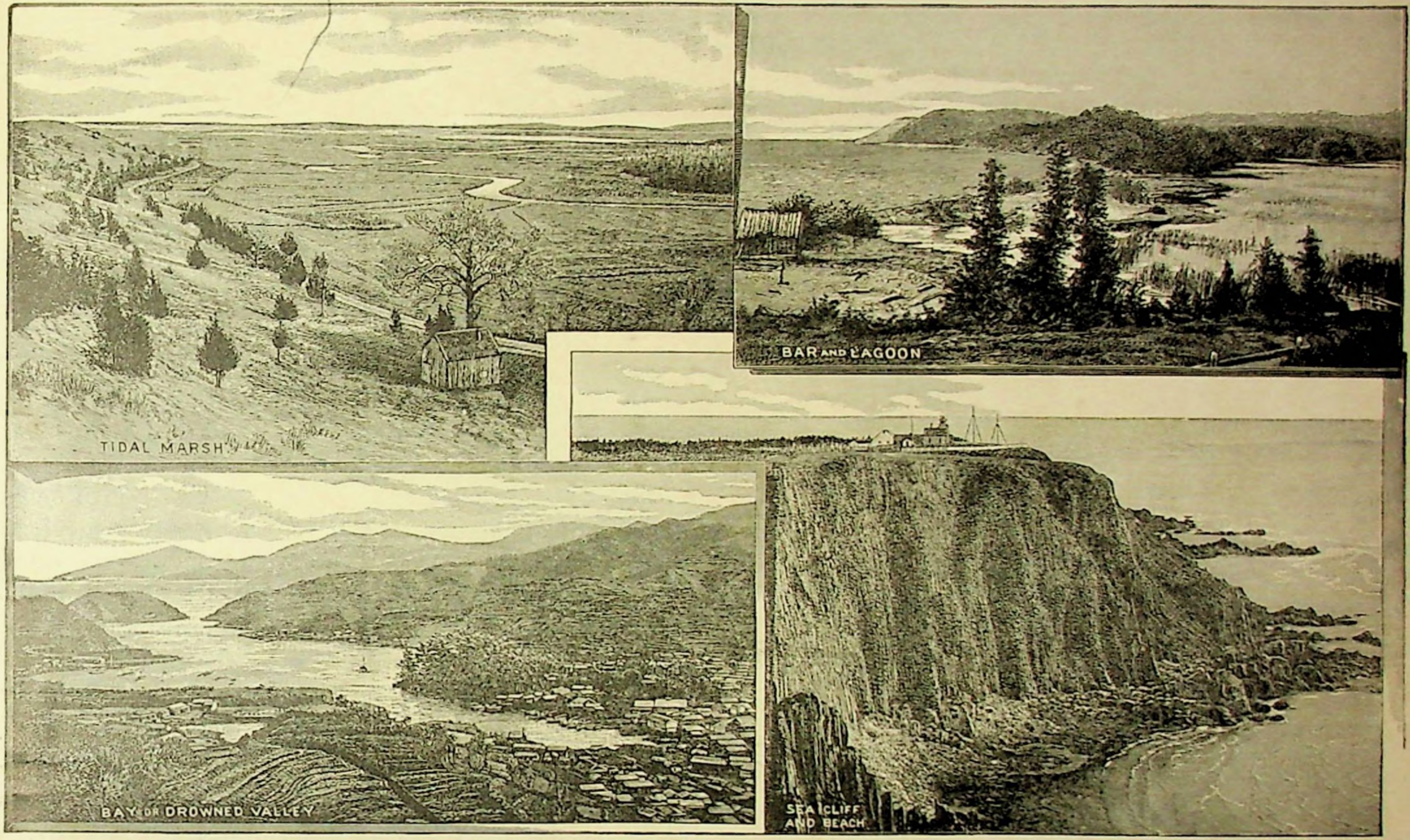
[1] To Teachers: — More exactly, in 24 hours and 50 minutes, since the moon does not go round the earth in just one day. Some places have but one tide a day; others have more than two tides in that time. This is chiefly due to tidal currents flowing to the same place from different directions.

One small picture at the bottom of page 12 shows an even coast line made by a smooth sea-bottom that has been lifted out of the water, forming a coastal plain. Rivers flowing across the plain have made deltas at their mouths. The picture beside it shows a very broken coast, with fine harbors, made by the sinking of the land shown in the other picture. Only the upper parts of the highlands remain; the lower parts of the valleys are filled with water.



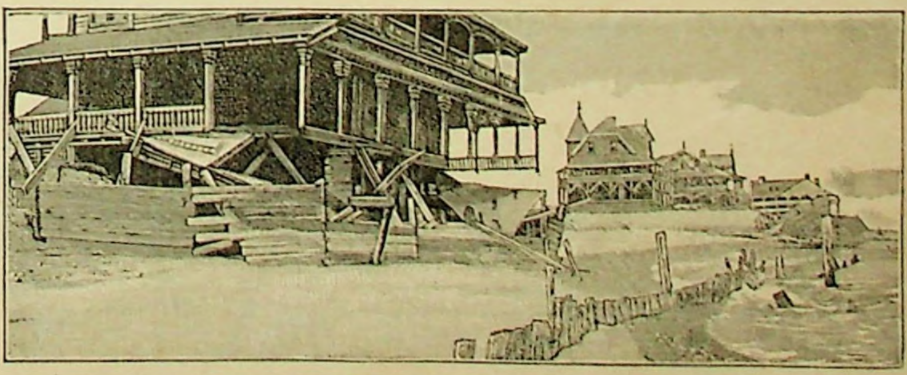
Nearly all the best harbors, except those in river mouths, have been formed by the settling of hilly land partly beneath the sea.

When smooth or level sea-bottoms rise out of the sea they form straight or gently curving shore lines.

Along such shores there are but few bays in which vessels can find shelter from winds and waves; but there may be good harbors in mouths of rivers flowing into the sea.

In places where rough or rugged lands have partly sunk beneath the sea the water has flowed into the valleys between the hills or mountains and made very uneven or broken shore lines. The water may wholly or partly surround some hills and make islands or peninsulas.

There are good harbors along such coasts. Vessels can run into the bays or find shelter behind islands. Many people living near such coasts become good sailors.


Houses wrecked by storm waves on a sandy beach

Storm waves slowly wear away parts of some coasts. The waves beat most violently on headlands that jut far out into the sea. As these are worn back, their steep faces form *sea cliffs*.

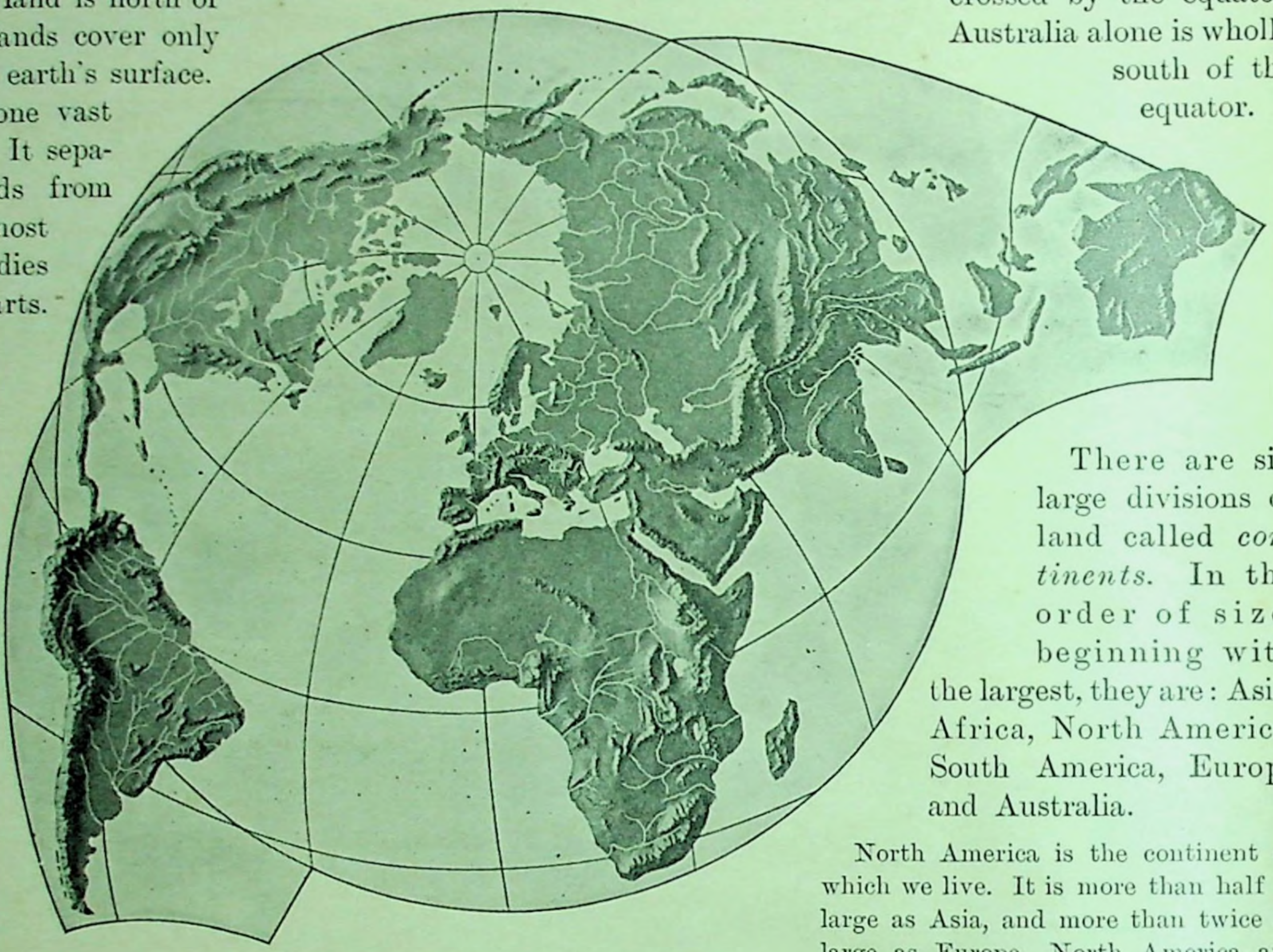
Sand and gravel often form *beaches* at the foot of cliffs. Part of the rock waste is also carried by waves along the shores, where it spreads out into beaches, or builds *bars* that cut off parts of bays and make the shores straighter. Waves also gather sand from some shallow bottoms and throw it up in bars. The parts of bays cut off by bars are called *lagoons*.

Soil from the land washes into the lagoons, and when they become shallow enough many water plants grow there. In time the lagoons may thus be filled with mud, roots and stems, forming *marshes*. *See picture.* There are many thousand acres of marshy land formed in this way along the eastern coast of our country.

Helps: — Describe an island; a peninsula; an isthmus; a strait; a sound; a bay, gulf or sea; a good harbor; a lagoon; a marsh. What kind of shores are formed when smooth sea-bottoms rise and form plains? When rugged lands partly settle beneath the sea? What can you tell about work of storm waves? How are some shores made straighter?

Topics: — Compare island, peninsula and isthmus; describe arms of the sea; rising and sinking shores; harbors; storm waves; drifting rock waste; beaches and bars; lagoons and marshes.

11. The Continents



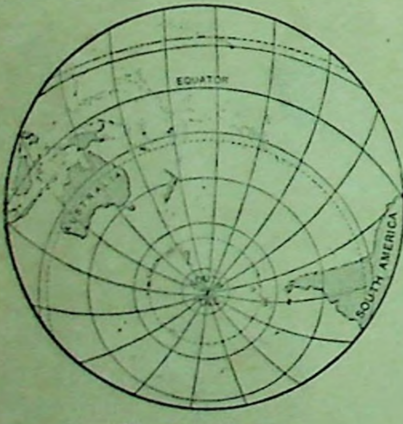
Most of the lands of the earth are in a few large bodies. The greater part of the land is north of the equator. All the lands cover only about one fourth of the earth's surface.

The sea spreads in one vast sheet round the lands. It separates the many islands from one another, and almost divides the greater bodies of land into smaller parts.

One of the great bodies of land is called *America*. The sea surrounds it, and almost cuts it into two parts at the *isthmus of Panama*. One part is called *North America*, the other *South America*. A canal now cuts through the isthmus.

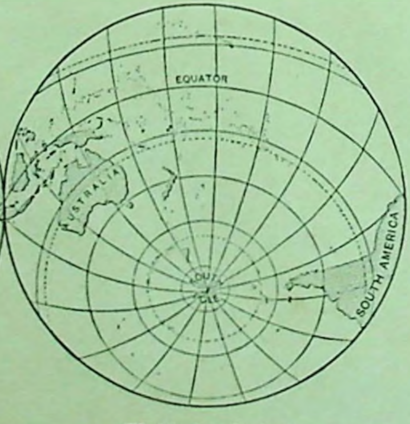
On the other side of the earth are two great land bodies. The smaller is called *Australia;* it also has the sea on all sides. The other land area is the largest on the earth. Two long arms of the sea almost cut off one part, called *Africa*, from the other part, called *Eurasia*, but the *isthmus of Suez* unites them. A canal crosses this isthmus.

Eurasia consists of two parts,—*Asia* in the east, and *Europe* in the west. Europe extends westward from Asia, like a great peninsula, with the sea on three sides.[1]



Water hemisphere

Land hemisphere



Water hemisphere

In the far north three of these large divisions of land, North America, Europe and Asia, circle partly round the north pole. Only two of them, South America and Africa, are crossed by the equator. Australia alone is wholly south of the equator.

There are six large divisions of land called *continents*. In the order of size, beginning with the largest, they are: Asia, Africa, North America, South America, Europe and Australia.

North America is the continent on which we live. It is more than half as large as Asia, and more than twice as large as Europe. North America and Europe are somewhat larger than the continent of Africa.

Maps like those on the opposite page are made to show the two sides of the earth. They are called maps of the *hemispheres*. The one that contains America is the *western hemisphere;* the other is the *eastern hemisphere*. The eastern hemisphere is also called the *Old World*, because the white people lived there long before America, or the *New World*, was discovered.

Within the large circle on the map at the top of this page is shown the half of the earth that contains the most land; and two parts of the other side of the earth are lifted out into sight, to show the largest lands on that side, — just as the peel of an orange might be cut and lifted out. In this map the north pole is not at the top, for here the axis of the earth leans forward. See how the north-and-south lines curve towards the pole, just as in the little map of the land hemisphere.

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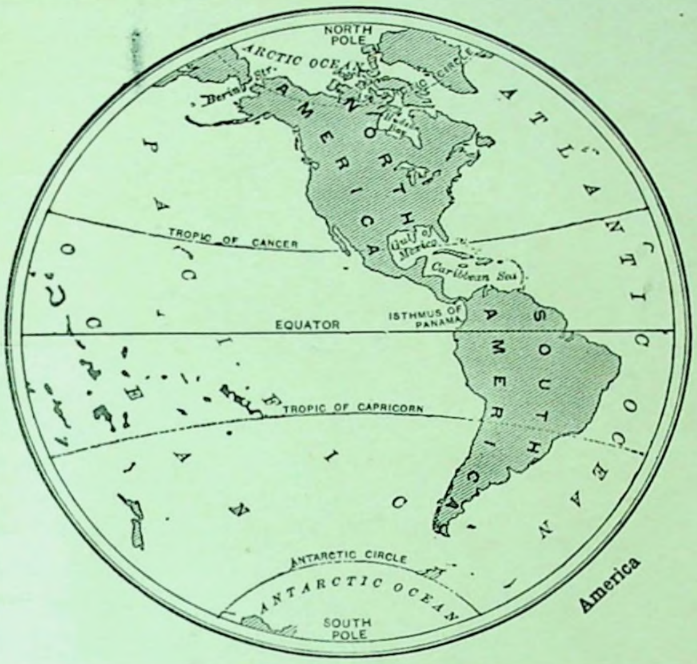
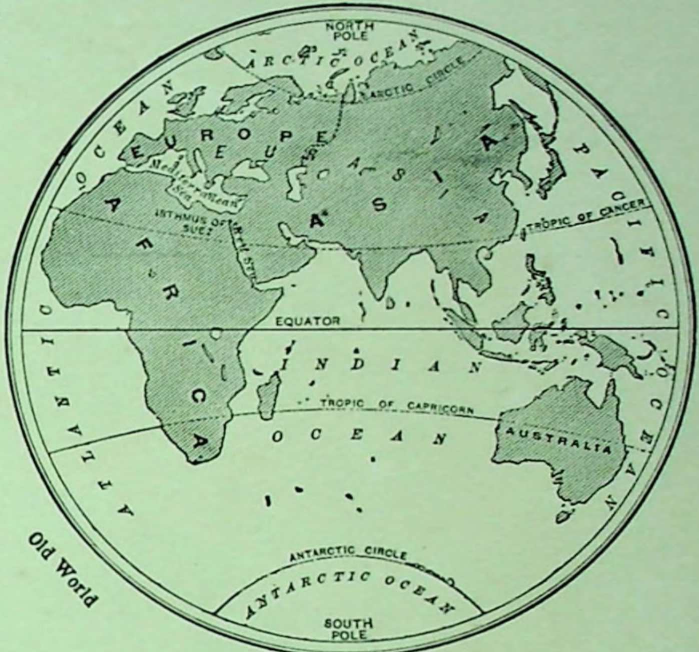
[1] The word *Eurasia* means *Europe-Asia*, and is made of the first three letters of Europe (*Eur*) prefixed to Asia. Europe, although in *form* a long and broad peninsula west of Asia, has its distinct mountain system, climate, industries, commercial relations, art, literature, civilization and, in modern times, its distinctive place in the world's history. In its bearing on the world's present development, Europe far excels Asia and is entitled to a separate and prominent place in geography and history. It is of course well to call attention to the relation of these areas, as of all others, in form and position, but to continue the treatment of the two together is not practical nor in line with modern science.

In climate, plants, animals, races of people, art, literature and history, as well as in scores of other relations, Europe resembles North America a hundredfold more closely than southern Asia resembles the other parts of the *same continent* in and north of the great highland of Tibet.

Europe, one of the greatest factors in the world's progress, should not be obscured by treating it as a mere appendage to Asia, simply because two plains in the north, once separated by the sea, now lie on opposite sides of a low mountain range. Modern botany, zoölogy and ethnology often consider Europe as part of a region or realm (*Afeurasia*) consisting of the part of Africa north of the Sahara, the whole of Europe and the *part* of Asia in and north of the great highland of Tibet; but *no authority in any science* considers Europe and all Asia together as a unit.



Western hemisphere



Eastern hemisphere

Each of the continents has a long highland running through it, like a backbone. These highlands are mostly plateaus, above which rise long and high ranges of mountains. The lofty regions are known as the *primary highlands* of the continent; together they form the primary highland of the world.[1]

Helps: — On which side of equator is most of land? What portion of earth's surface is land? What isthmus joins North and South America? What isthmus unites Africa with Eurasia? What large bodies of land form Eurasia? Where is Europe? Australia?

Which large divisions of land partly circle round north pole? Which are crossed by equator? Which is wholly south of equator?

What is a continent? Name six continents in order of size. Compare North America in size with Asia; with Europe; with Africa. Which continents are in western hemisphere? In eastern hemisphere? Why called Old and New World?

What is meant by primary highland?

Topics: — Land and sea; America; Australia; Africa; Eurasia; Europe; lands round north pole; lands and equator; continents; size of North America; hemisphere; Old and New World; primary highland.

12. The Oceans

The great body of salt water that lies in the broad valleys between the continents is called the *sea* or the *ocean.* Various parts of this one great sea are also called *oceans.*

Most parts of the sea *within a few miles of the land* are shallow. Far from the shores the sea is in many places two miles deep, and in some places it is four or five miles deep.

The land and the *surface* of the sea have light by day and darkness by night. They have also warm and cold seasons; but no sunshine reaches the deep parts of the sea. The deep water of the ocean is always cold and dark.

The land has many valleys and mountains; but a large part of the sea-bottom is a great smooth plain.

The wind blows dust and sand over the land and also makes waves on the surface of the sea; but the deep sea is very still.

Part of the rain falling on the land feeds rivers which wear deep valleys and wash the loose soil down the slopes to the sea. Nearly all the soil that enters the sea settles in the shallow water near the shores. The smooth bottom of the deep parts of the sea hardly changes at all, for there are no streams to wear valleys in it, and very little soil from the land reaches these quiet waters.

Western hemisphere

Eastern hemisphere

Seaweeds, fish and other forms of life abound in the shallow waters near the seashores; but the cold dark depths of the sea have only a few, if any, plants, and not nearly so many kinds of animals as live either in the shore-waters or on the land.

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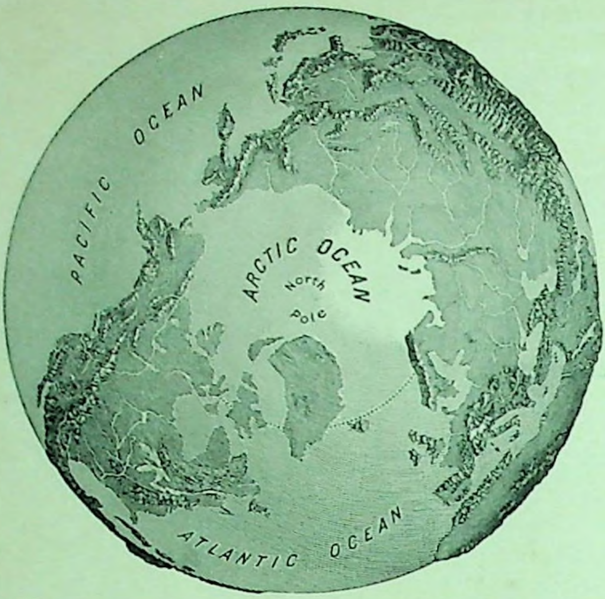
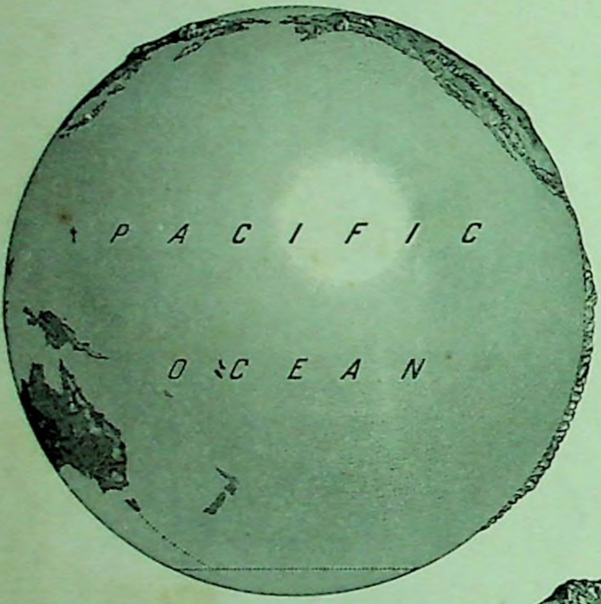
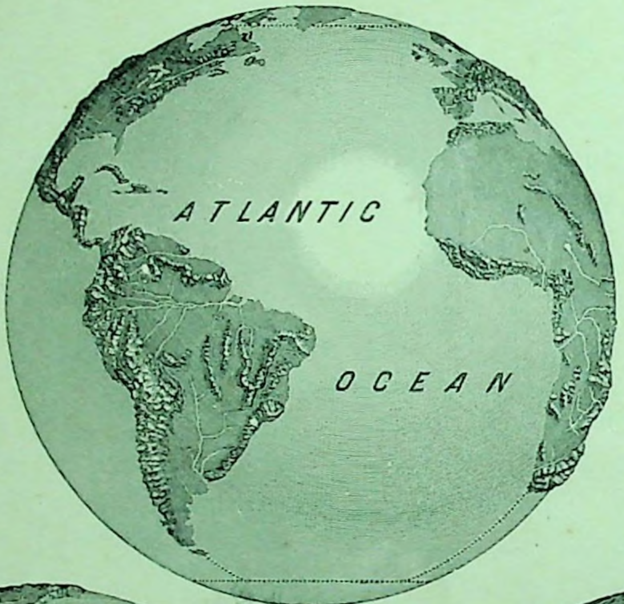
[1] To Teachers: — Explorers have found land in the Antarctic ocean. This land mass, called Antarctica, surrounds the south pole and in places extends beyond the Antarctic circle. It is larger than Australia.

Animals and plants, or parts of them, are often buried in the layers of sand and mud at the bottom of the sea. During long ages many such layers form and gradually harden to rock. The remains of animals or plants bedded in the rock are called *fossils*. When fossils of creatures that live only in the sea are found bedded in rocks that now form part of the dry land we know that such rocks were once part of the bed of the sea. *See text about coastal plains, lesson 6.*

We may think of the vast body of water spreading round the south pole as the main body from which all other parts of the sea extend like arms. Thus, the *Pacific ocean* is a broad arm of the sea reaching northward between the west coast of America and the Old World.





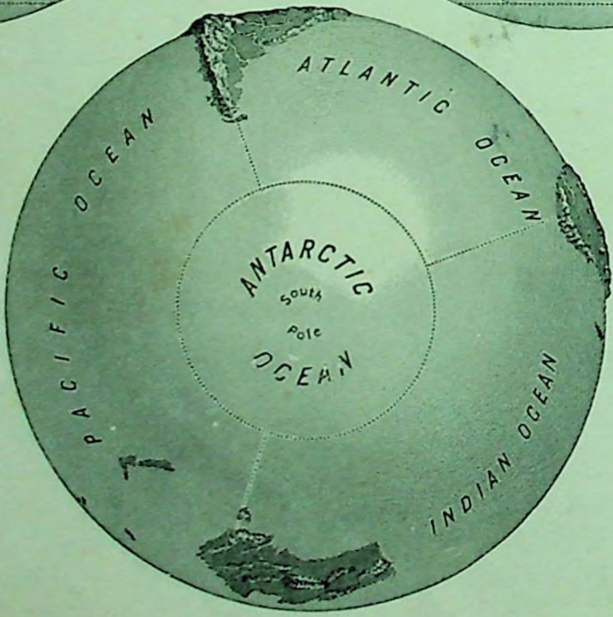


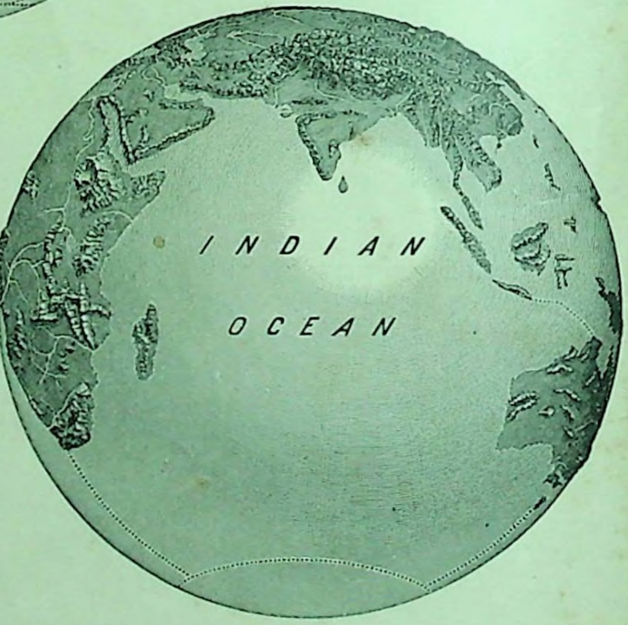
The Pacific is the largest of the oceans. It is much larger than all the lands of the earth put together. It covers nearly one third of the earth's surface and is almost twice as large as any other ocean.

The *Atlantic ocean* is a long, crooked arm of the sea also stretching northward, but on the east side of America.

This ocean is more than half as large as the Pacific, but toward its shores slope many wide fertile plains. Thousands of ships help in the exchange of the products of the fields, the mines and the workshops of the rich lands that border on the Atlantic.

The *Arctic ocean* is like a great gulf at the northern end of the Atlantic, and lies between the bleak northern shores of America and the Old World.





Most parts of the Arctic ocean are always covered with ice. The lands along its borders are very cold, and the soil thaws only to the depth of a few inches during a few of the warmest weeks of summer. The Arctic ocean is larger than Europe.

The *Indian ocean* is a broad arm of the sea partly between Africa and Australia.

The Indian ocean is much larger than Asia, but it is less than half as large as the Pacific. This is the warmest of the oceans; only its southern part enters the region of ice.

The *Antarctic ocean* spreads round the south pole, as the Arctic spreads round the north pole.

These two oceans supply but little for the comfort of man. Ships seldom visit the icy regions of the Antarctic, but they visit the Arctic ocean to kill whales for their oil.

Helps: —What is the sea or ocean? Tell some differences between land and deep sea; between deep sea and shallow waters along shores. What are fossils? What oceans extend northward from south polar region? Which ocean is east of America? West of America? How do these oceans compare in size?

On which side of Old World is Atlantic ocean? Pacific ocean? Where is Arctic ocean? Which pole is near middle of that ocean?

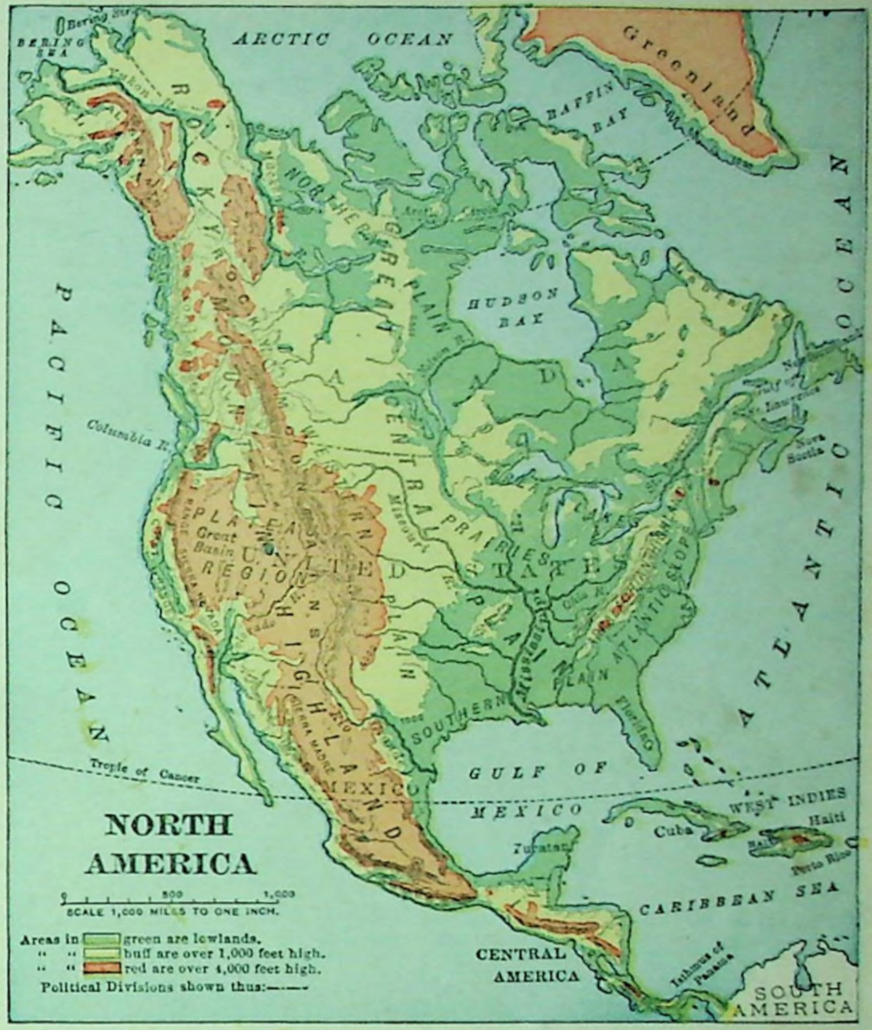
What ocean is south of Asia? What three continents partly surround that ocean? Name continents that border on Pacific ocean; Atlantic ocean; Arctic ocean.

What oceans touch coasts of North America? Of Asia? Of Australia? Of Africa? Of South America? Which oceans are crossed by equator? Which is wholly north of equator? Wholly south?

Topics: — The sea; land and deep sea; deep sea and shallow shore waters; Pacific ocean; Atlantic ocean; Arctic ocean; Indian ocean; Antarctic ocean; oceans crossed by equator.

13. Surface of North America[1]

North America is shaped like a triangle. It is broad in the north and tapers towards the south. The three sides of the triangle are formed by the coasts of three oceans. Two very large arms of the sea indent the coast, namely, the *gulf of Mexico* on the southeast, and *Hudson bay* on the northeast. In the extreme northwest is the great peninsula called *Alaska*.



Alaska is far from the equator and is very cold and thinly settled. Small tribes of people called *Eskimos* live along the shores of the Arctic ocean. They feed chiefly on seals and other creatures caught on the ice or in the cold waters.

What ocean is east of North America? West of it? North of it?

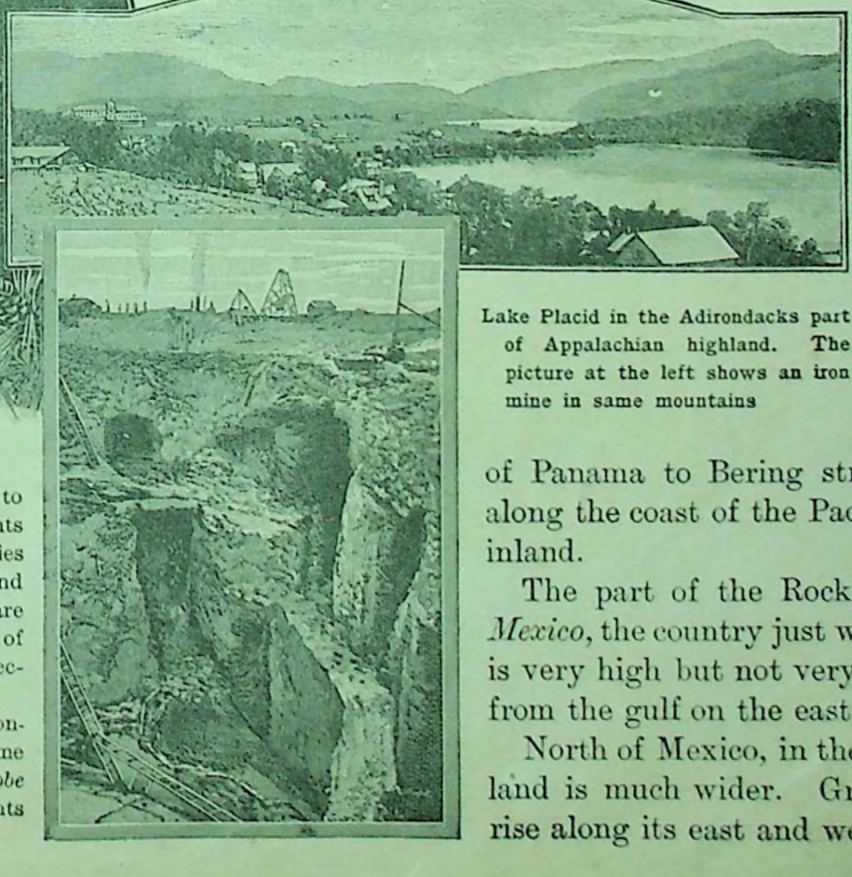
North America consists mainly of a great western highland, a lesser eastern highland and a broad plain between. This plain reaches from the warm low shores of the gulf of Mexico to the frozen shores along the Arctic ocean.

The great highland in the western part of North America is known as the *Rocky mountain highland*. It includes the plateaus and ranges forming a chain from the isthmus of Panama to Bering strait. This highland lies along the coast of the Pacific, and also spreads far inland.

The part of the Rocky mountain highland in *Mexico*, the country just west of the gulf of Mexico, is very high but not very wide, though it reaches from the gulf on the east to the ocean on the west.

North of Mexico, in the *United States*, the highland is much wider. Great ranges of mountains rise along its east and west sides, and many other

Snow-covered peaks in the Rocky mountains



Lake Placid in the Adirondacks part of Appalachian highland. The picture at the left shows an iron mine in same mountains ranges lie between them. This part of the highland has the richest gold mines in the world.

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[1] To Teachers: — The object of lessons 13 to 18 is to give pupils a general view of the continents and to locate such physical features and countries as will best prepare for the study of climate and life. This explains why only a few countries are named at this time. The more complete study of the surfaces of the continents will come in connection with the countries.

The series of colored or physical maps of the continents illustrating these lessons are all on the same scale of area. The same is true of all the *globe maps* in this book. Tables of areas and heights are given in the supplement.

Farther north, in the land known as *Canada,* the lofty ranges still continue, but the highland is not quite so wide.

The region reaching from Mexico to the isthmus of Panama is known as *Central America.*

Sowing seed in Central plain

Grain field in Central plain

The lesser highland in the eastern part of the United States is called the *Appalachian highland.* It has the same general direction as the Atlantic coast, but in most places is somewhat back from that coast. Its ranges are much lower than those in the far west.

Between the highlands of the east and the west stretches the great Central plain. Nearly all of the part of this plain in our country is drained by the Mississippi river and its many branches flowing to the gulf of Mexico. Other rivers much farther north show that the other part of the Central plain slopes towards the colder portions of the earth.

In this Central plain lies a chain of very large lakes, called the *Great Lakes.* The lands around them rank among the richest in the world. There are fertile farms raising immense crops of wheat and corn. Millions of cattle and horses graze in the fields. Many people live in these plains, and large cities have grown in places best suited to trade, but especially along the shores of the Great Lakes. The fertile plains spreading round these lakes are called *prairies.*

The St. Lawrence river flows from the lowest of the Great Lakes to the sea.

The southern part of the great plain in the United States is the best cotton region of the earth.

The plain in the far north along the Arctic shores is frozen all the year, except when the summer sun thaws the soil for a few inches in depth.

Both the gulf of Mexico and Hudson bay are arms of the Atlantic ocean. The great gulf is in the warm part of the earth; the great bay is in a much colder region.

At the entrance to the gulf of Mexico lies the warm and fertile island of Cuba. A few miles north of this island the peninsula of Florida helps to inclose the gulf of Mexico. Cuba is the largest of a great group of islands called the *West Indies.*

Islands that are buried in ice and snow a large part of the time lie near the entrance to Hudson bay. Far to the northeast is the cold and barren island of Greenland.

Helps: — What is shape of North America? What oceans reach shores of this continent? What is said of Alaska?

Of what great features does surface of North America consist? Locate Rocky mountain highland. What is said about part in Mexico? In United States? In Canada?

Describe Appalachian highland. Where is great Central plain? What river system drains southern half of this plain? In what general direction do rivers of northern half of this plain run? Into what bodies of water do they flow?

Describe region round Great Lakes. Where is much cotton raised? Why cannot many plants grow on plains in far north?

What is said of gulf of Mexico? Hudson bay? Cuba? Greenland?

Topics: — Shape of North America; its shores; Alaska; general surface of North America; western highland; eastern highland; Central plain; Great Lakes; great arms of sea that indent shores; Cuba and Greenland.

14. Surface of South America

South America also has the shape of a triangle and is widest in the north and tapers towards the south. Its coast is not so broken as that of North America.

What isthmus joins the two Americas? *See lesson 11.* What ocean is east of South America? North of it? West of it?

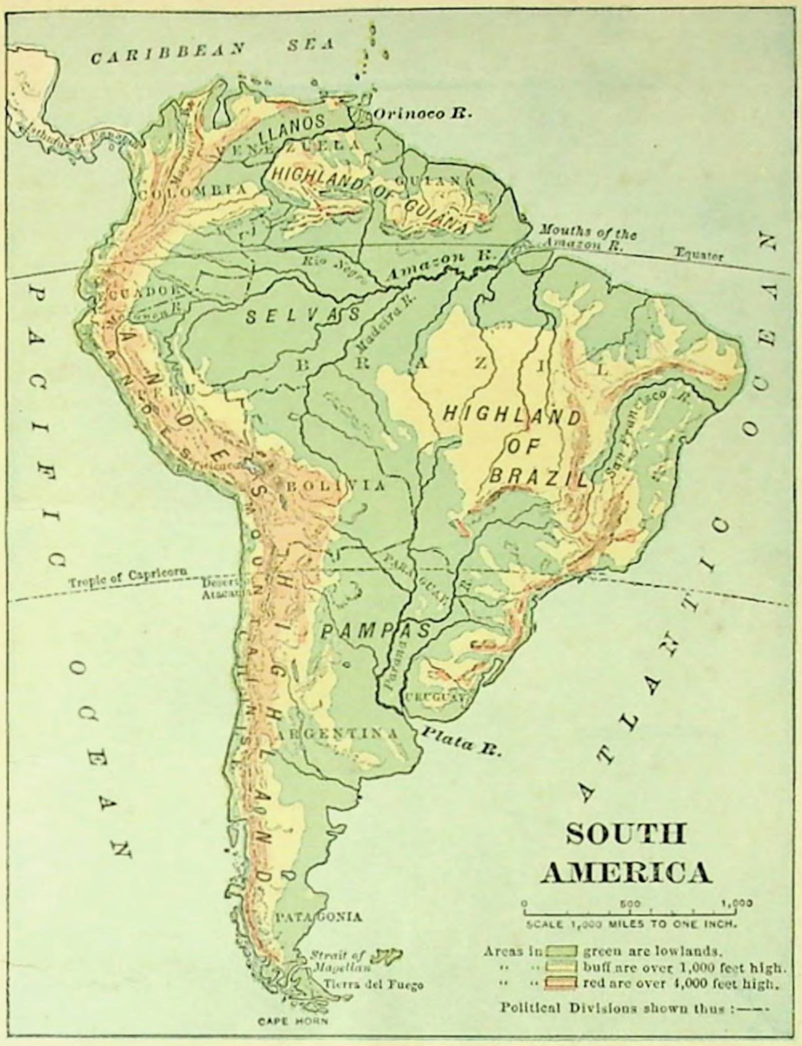
In general the surface of South America resembles that of North America. Each has its greatest or primary highland on the west, with lesser highlands on the east, and a great plain between.

The highland which lies along the west coast of South America is known as the *Andes highland,* or simply the *Andes.* It is not nearly so wide as the Rocky mountain highland, but it has much higher plateaus.

Indians living in savage state in the selvas by the Amazon

The southern end of the Andes highland reaches a very cool part of the earth, far from the equator; but the middle and northern parts are warmer. Being very high, the plateaus even close to the equator are not hot, like the lowlands on the east.

Near the middle of the long highland, in one of the lofty plateaus, is a beautiful body of water, called *lake Titicaca.* Later you will read about the Indians that built stone temples hundreds



of years ago not far from its shores. There are rich copper, tin and silver mines in the Andes.

Over the eastern part of South America spreads a low but broad plateau, not nearly so high as the Andes. This plateau is mainly in the eastern half of a country called *Brazil* and is known as the *highland of Brazil*.

The white and the black people in this highland raise much of the coffee used in our country. The region is in a hot part of the earth, not far south of the equator. It is in such hot hilly land, having plenty of rainfall, that coffee thrives best.

The western half of Brazil is part of the Central plain and contains vast forests called *selvas*. Most of the trees grow in the lowlands along the rivers that form the *Amazon system*. The Amazon river and its branches drain the largest river basin in the world. The selvas are in this basin. Most of the largest rivers of the Amazon system flow from the Andes highland.

In what direction does the Amazon flow? Into what ocean?

The Amazon river flows almost parallel with the equator and not far from it. The land is low and hot, and is suited to the growth of many kinds of trees and smaller plants. Many tribes of Indians live by hunting and fishing in the forests and streams of the selvas.

The part of the Central plain south of the selvas is grassy and supports millions of cattle and horses. In that land such grassy plains are called *pampas*. The parts of the Central plain north of the selvas are called *llanos*, meaning *level* land. There also the people raise many cattle.

Helps: — Compare North and South America in shape. What oceans bound South America? Compare general surface of two parts of America. Describe western highland of South America. What is said of lake Titicaca?

Describe highland of Brazil. Where are selvas? Describe Amazon system and basin.

What and where are pampas? Llanos?

Topics: — Two parts of America; oceans round South America; western highlands; eastern highlands; selvas and Amazon; pampas; llanos.

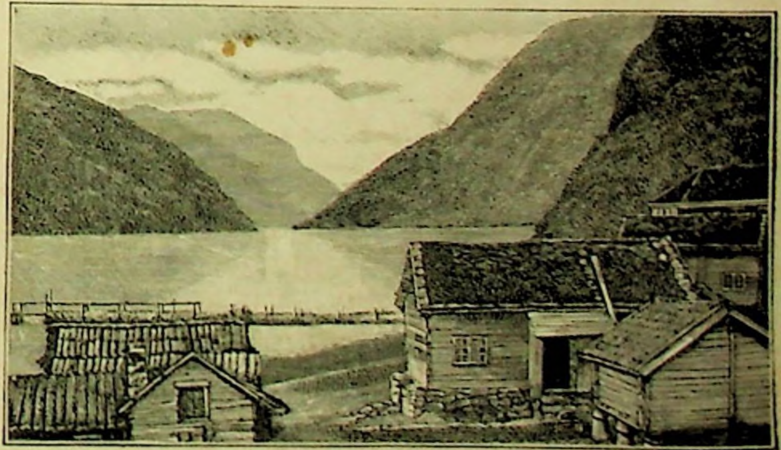
15. Surface of Europe

Far to the east of North America, across the Atlantic ocean, lies Europe. It has the most broken or irregular coast line of all the continents. Large bays indent nearly all parts of its coast and partly surround many great peninsulas. Even the whole continent seems like a huge peninsula extending westward from Asia.

What ocean is west of Europe? North of it? What great sea separates Europe from Africa? Where are the British Isles? Name two large seas between Europe and Asia.

The chief highland of Europe is in the southern part. The highest mountains there are called the *Alps*, and the entire mountain system is often called the *Alpine highland*. This highland begins near the Atlantic shores and extends to the Black sea.

The Alps are famous for the beauty and grandeur of their lake and mountain scenery. Every summer thousands of tourists visit the Alps. These mountains are about halfway between the equator and the north pole. The Swiss people live among the Alps.



Scene in Norway, on northwest coast of Europe

A great plain spreads towards the north and northeast from the Alpine highland. This plain reaches to the Arctic ocean on the north, and stretches east and west across the northern part of Europe and Asia, from the Atlantic ocean on the west to the Pacific in the far east.

West and north of the Alpine highland the plain is narrow, but on it are found some of the foremost nations of white people in the world, such as the French on the west and the Germans on the north. Farther to the northeast lies the great country of Russia, between the Arctic ocean on the north, and the Black and Caspian seas on the south. A portion of this wide plain crosses Asia and in that continent is known as *Siberia*.

The southern half of the great plain in Europe raises about the same kinds of farm products as the prairies round the Great Lakes in North America. There are wheat and corn and other grains, as well as rich grass for cattle.

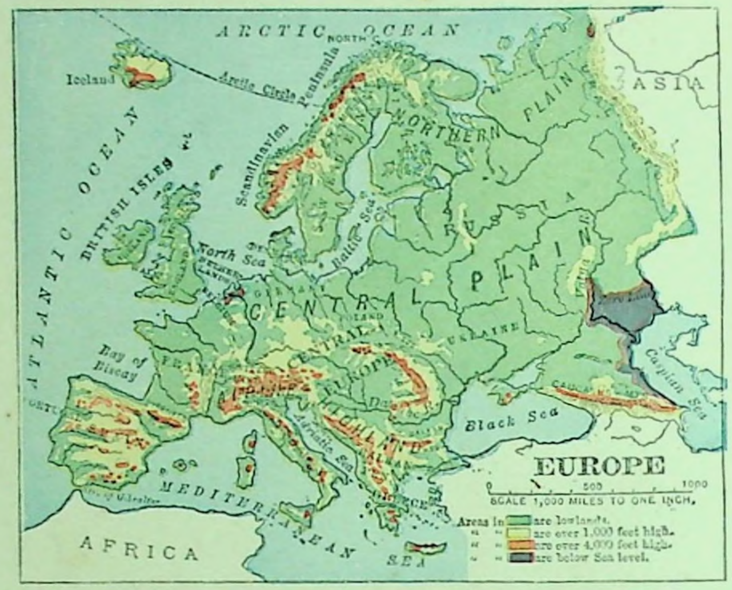
Towards the north the plains are colder, and fewer grains can be raised. In the far north, near the Arctic shores, the ground is frozen as in the northern part of the Central plain of North America. Small tribes of yellow people, belonging to the same great family as the Eskimos, live on these cold plains.

Helps: — Locate Europe. Describe its coast. What oceans border on Europe? Name three seas on south and southeast. Locate British Isles; France; Germany.

In what part of Europe is chief highland? What is it called? Locate part called Alps.

What part of Europe is great plain? What is said of plain west and north of Alpine highland? Of part farther northeast? Name three of the nations making their home on great plain in Europe. Where do Swiss people live? What is said of products of great plain?

Topics: — Coast of Europe; Alpine highland and Alps; great plain in Europe; people on this plain; products of plain.



16. Surface of Asia

The continent of Asia covers about one twelfth of the surface of the earth and contains nearly one third of the land.

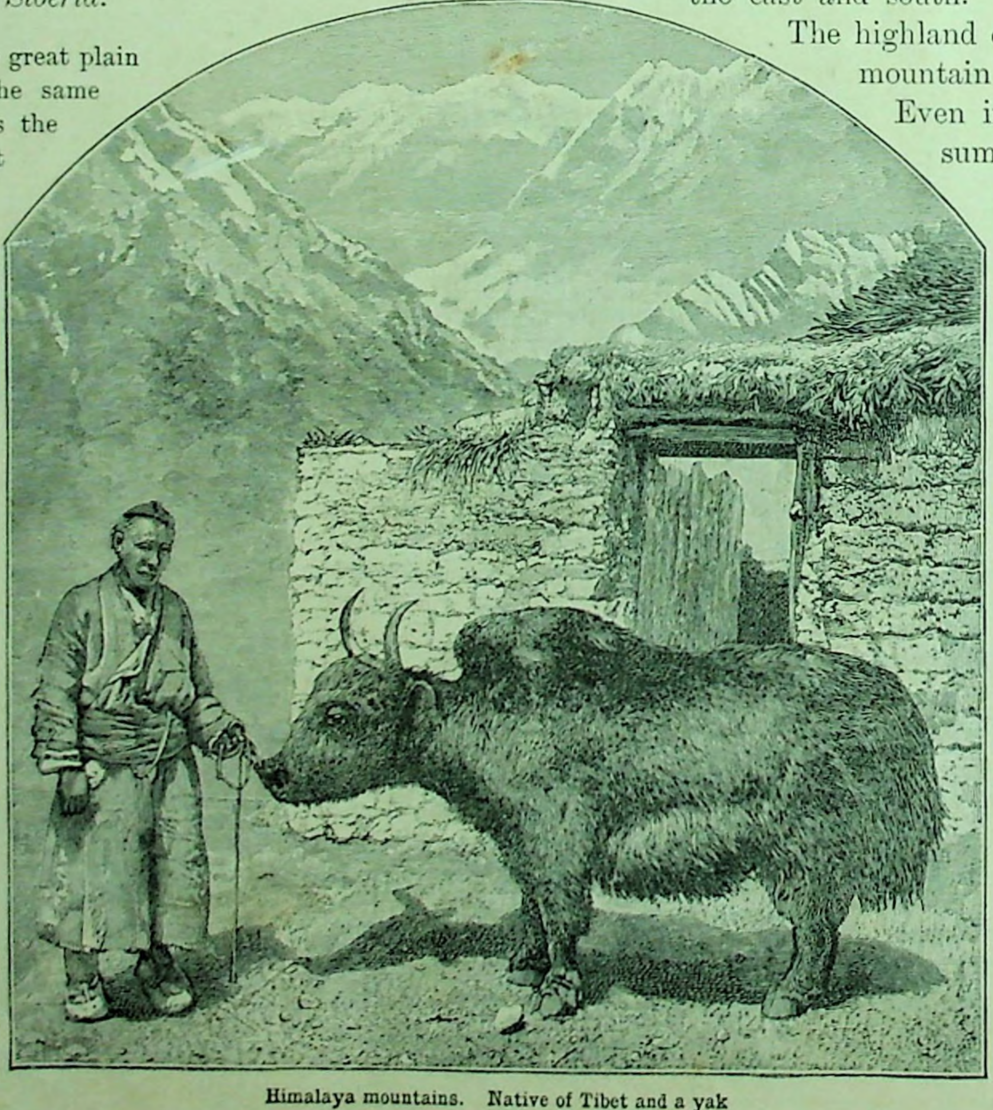
This continent has a very irregular coast line, and is surrounded on the east and south by large bays.

What ocean is north of Asia? East? South?

The surface of this great continent may be divided roughly into three parts, — the wide and lofty Asian highland, often called the *highland of Tibet;* the broad plains of Siberia on the north; the less broad plains on the east and south.

The highland of Tibet is the loftiest mountain region on the earth. Even in the hottest part of summer the highest mountains are buried in snow for a distance of two miles from their tops. The greater part of this highland is a lofty plateau. It is so high that the air there is very cold, except during the days of a short summer season.

The effect of such a mountain wall is very marked. Plants that grow in the warm slopes on the south could not live so far up in the cold lands, even if their seeds were carried there. The animals that feed on the plants of lowlands cannot cross such high ranges, as they cannot find food. People living on one side of the highland cannot



Himalaya mountains. Native of Tibet and a yak trade with people on the other side without going round the great mass of high land; they cannot carry the goods over the rough mountain passes without much difficulty.

We have seen that the plains in Siberia form part of a great plain stretching across all Eurasia, from ocean to ocean. The course of the rivers shows that the general slope of this plain in Asia is towards the northern ocean.

In Asia, as in Europe, grains and grasses thrive in the warmer southern part of the plain; but the northern part is cold and barren.

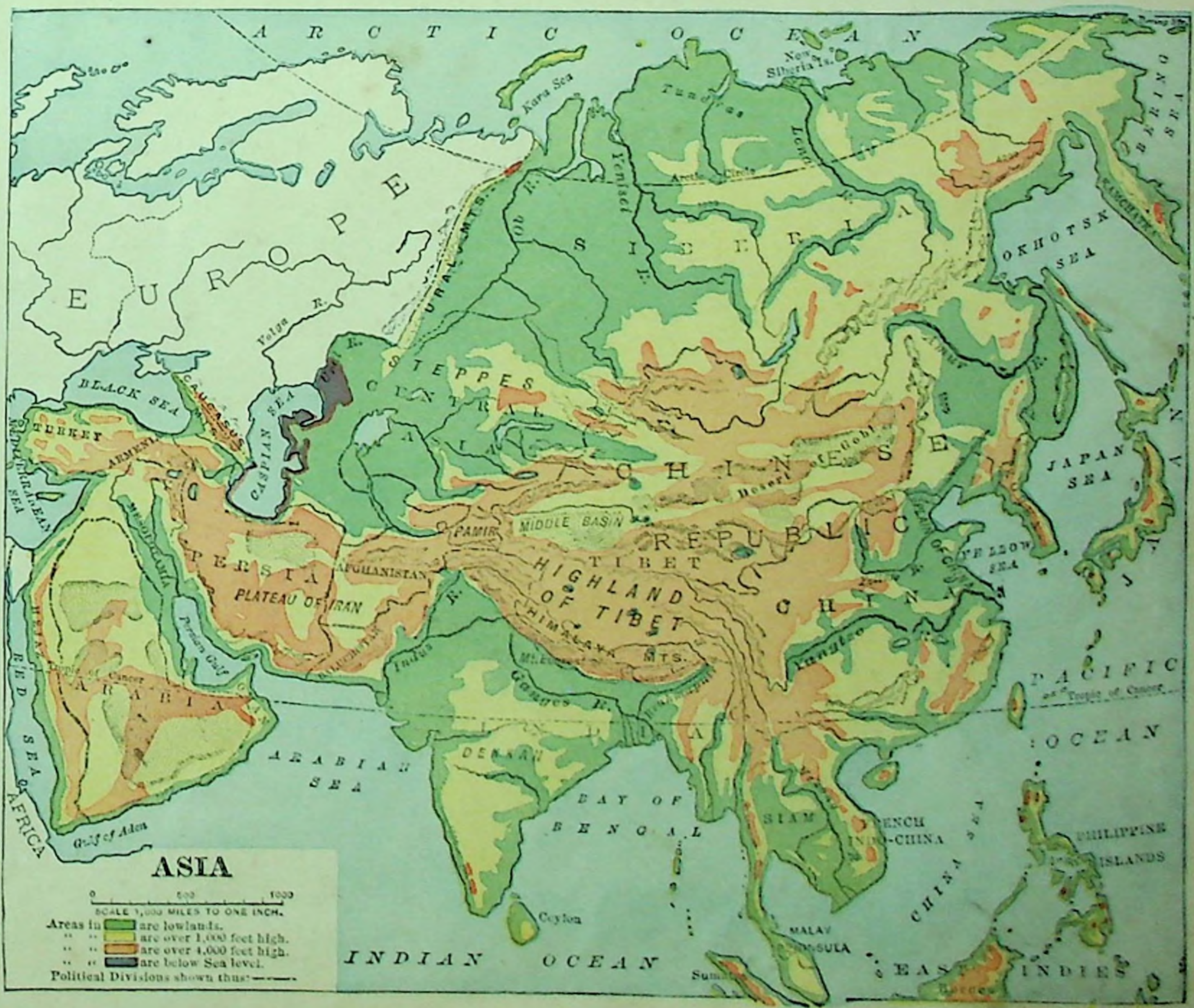
The most important plains of Asia are east and south of the highland of Tibet. On the east, along the Pacific shore, are rich plains that form part of the great country called *China*. Most parts of these plains are the deltas of long rivers. The soil is very rich and supports hundreds of millions of people.

In the ocean east of China lies a group of islands forming the country of *Japan*.

Most of the yellow people on the earth live in China and Japan. They are famous for some kinds of work, such as silk weaving and the carving of ivory. A large part of the tea used in our country is raised by the yellow people of China.

South of the highland of Tibet lies the large country called *India*. This land is not far from the equator and has plenty of rainfall. It is therefore very fertile. Many million people live in India, and they belong in the great family of white people. The lofty highland of Tibet separates the yellow people of China from the white people of India.

The southwest part of Asia consists mainly of plateaus crossed by mountain ranges, but not nearly so high as the plateaus and ranges of the highland of Tibet. Many parts of southwest Asia are deserts, but there are fertile river valleys. The great peninsula of Arabia, east of the Red sea, is chiefly a desert plateau, but it is famous for its coffee.



Arabia is the home of the people called *Arabs*, but they are found also in the countries of northern Africa. Many of them make their homes in the fertile spots round springs in the desert. They raise some grain and many date trees. The Arabs use many camels and horses.

Southeast of Asia are many large islands and almost countless small ones. They are known as the *East Indies*. The largest among these are Borneo, Sumatra and Java. *See map of Australia, page 187.*

One large group of islands southeast of Asia, called the *Philippines*, belongs to the United States.

The natives of the East Indies are mostly brown people. They raise a large portion of the spices used in the world.

Helps: — What is size of Asia? What oceans border on Asia? Of what three general regions does surface of Asia consist? Describe highland of Tibet: plains of Siberia; plains of China; plains of India; the East Indies.

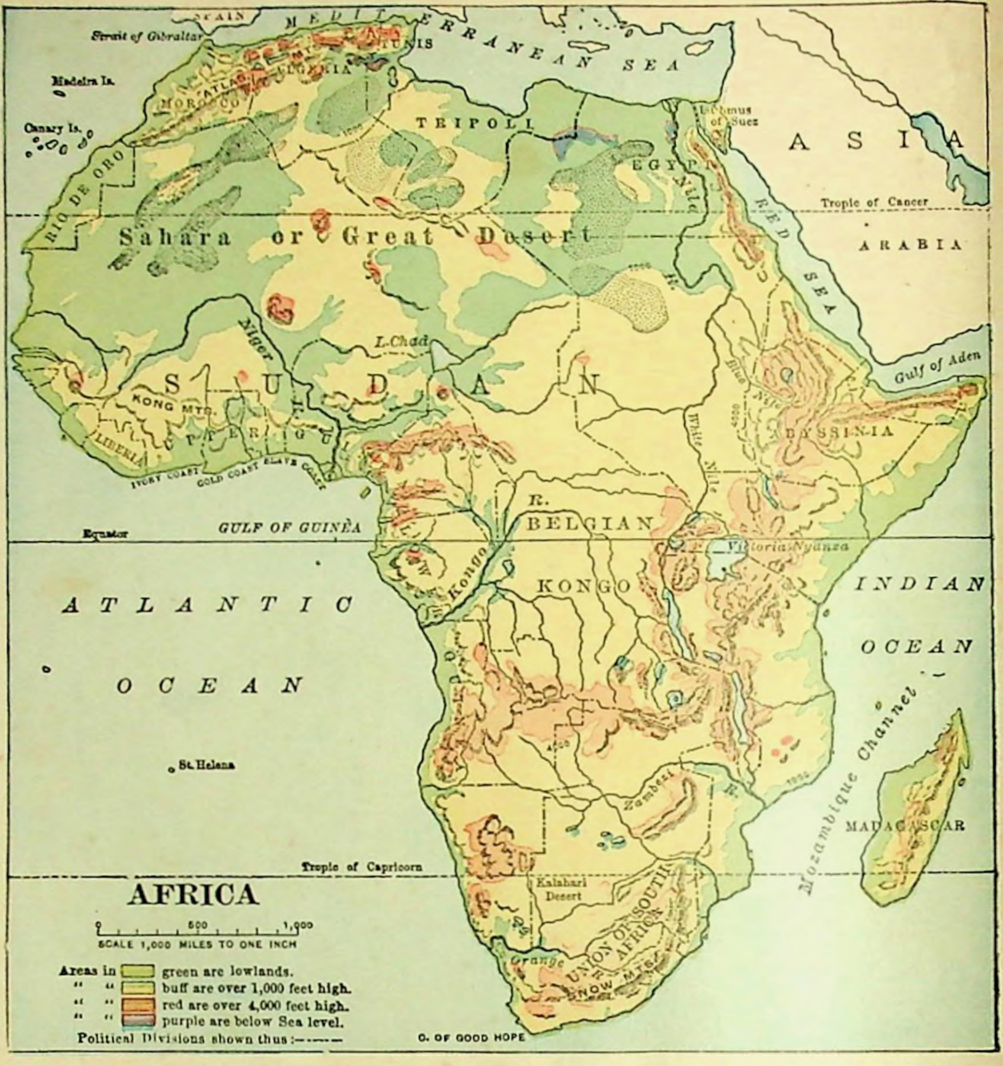
Where is Japan? Name some products of China and Japan. Name some islands of East Indies. What is said of Arabia and Arabs?

What group of islands southeast of Asia belongs to United States?

Topics: — Size of Asia; three chief regions; highland of Tibet; plains of Siberia; China; Japan; India; Arabia and Arabs; East Indies; Philippines.

17. Africa and Australia

AFRICA. The continent of Africa has a very regular seacoast, with the sea on all sides, except at the isthmus of Suez.



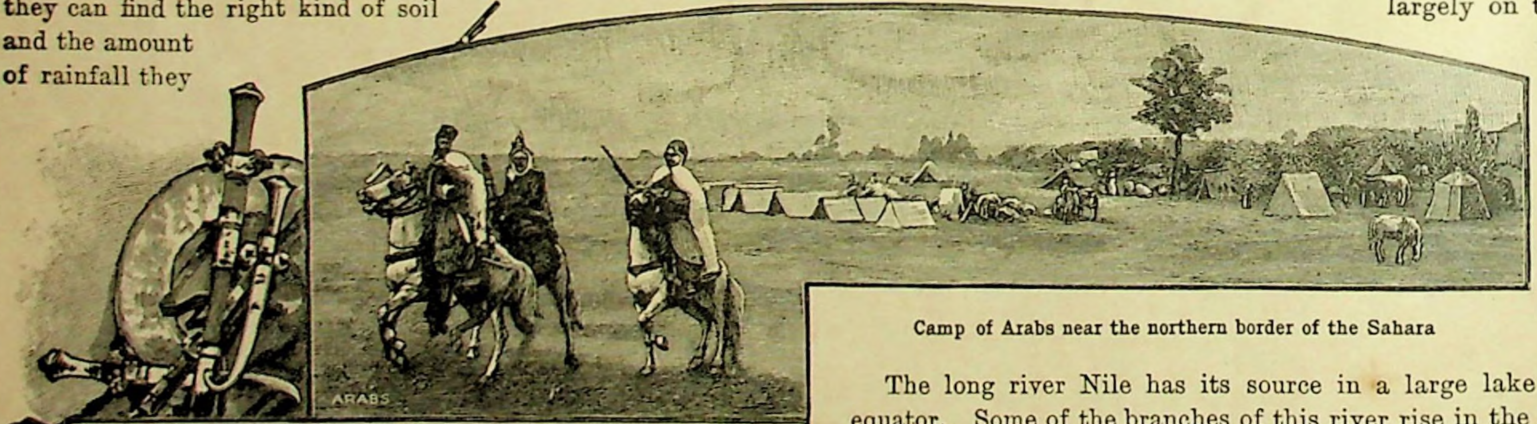
What great sea is on the north? What long and narrow sea is on the northeast? What continents are wholly or partly separated from Africa by these two seas?

What ocean is on the west? On the east? Name the largest island off the east coast of Africa.

The largest desert in the world is in northern Africa. It reaches from the Atlantic ocean to the Red sea, except where a narrow but fertile river valley, called the *Nile*, crosses it. The greater part of this desert is known as the *Sahara*, meaning *great desert*.

Plants that grow south of the Sahara may grow as far north as they can find the right kind of soil and the amount of rainfall they need, but they cannot spread across the dry sands of the desert. Animals that feed on such plants are not able to cross the desert. Like the great highland of Tibet, this is another boundary which is very hard for people, plants and the lower animals to pass.

There are small fertile places, called *oases*, in the desert. In and round them live desert tribes, raising a little grain, but living largely on the fruit of date trees. They keep thousands of camels that are very useful in crossing the wide desert.



Camp of Arabs near the northern border of the Sahara

Bedouin camp in the Sahara

The long river Nile has its source in a large lake under the equator. Some of the branches of this river rise in the great highland of eastern Africa.

The Nile flows northward across the eastern side of the great desert of northern Africa and is building larger and larger its broad delta in the Mediterranean sea. This is one of the rivers that have often overflowed their banks and have made flood plains or rich meadow lands. The Nile overflows every year. Its valley is therefore very fertile and forms part of the country called *Egypt*.

South of the Sahara lies a broad region known as *Sudan*. Many tribes of black people live there.

Light rains sometimes fall along the southern edge of the Sahara and there the grassy land begins. Southward the rain increases, and the plant life also; forests appear, and they extend far south of Sudan, into the basin of the river Kongo.

The equator passes through the middle of the Kongo basin, the largest in Africa. This basin lies due east of the Amazon basin. The rivers of both basins flow through hot lands where the rainfall is heavy. As a result, trees and smaller plants grow in great abundance. Millions of black people live in tribes in the basin of the Kongo. What people live in the selvas of the Amazon?

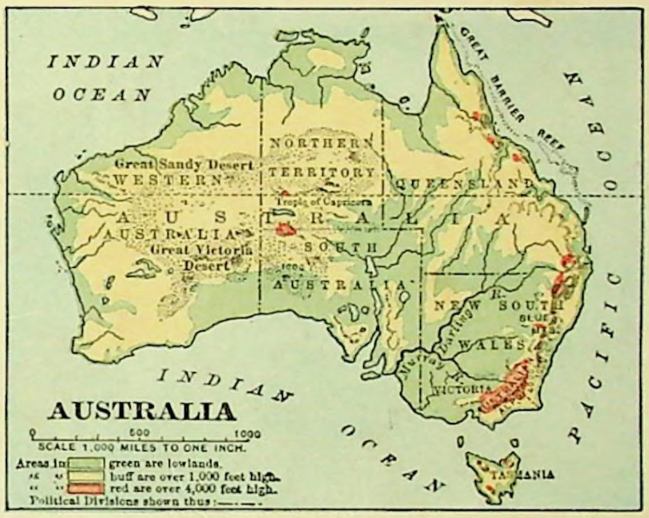
Many white people have made their homes in the southern part of Africa, where there are rich gold mines and diamond fields.

AUSTRALIA. This small continent has an even seacoast, except in the north.

What ocean is east of Australia? South of it? West of it?

The highest mountains of Australia are in the southeast. East and southeast of this range small rivers cross the short slope and flow into the Pacific ocean. Most of the white people of Australia live on this short slope.

A large part of middle Australia is very dry and is covered with scrubby bushes. Small tribes of poor black savages are found in parts of this continent, mostly near the coast.



Helps: — What is said of desert of Sahara? What is an oasis? Describe river Nile and its fertile lands. In what country is delta of Nile river? Where is Sudan? What is said of it? Describe Kongo basin. Into what ocean does Kongo river flow? Name two occupations of people in southern Africa.

What is said of seacoast of Australia? Where are highest mountains in this continent? What is condition of large part of middle Australia?

Topics: — Seacoast of Africa; bodies of water round it; Sahara; oases; Nile; Egypt; Sudan; Kongo basin; southern Africa.

Seacoast of Australia; mountains; east and southeast slopes; middle Australia; black people.

CLIMATE OF THE EARTH

18. Latitude and Longitude

By the *climate* of a place is meant the usual state of its atmosphere, — whether hot or cold, dry or rain-giving, healthful or unhealthful.

In studying the climate of any place we need to know about how far it is from the equator, what its seasons are, whether it is on high land or low land, whether its winds are hot or cold, dry or moist. First, let us learn how to locate places on the earth.

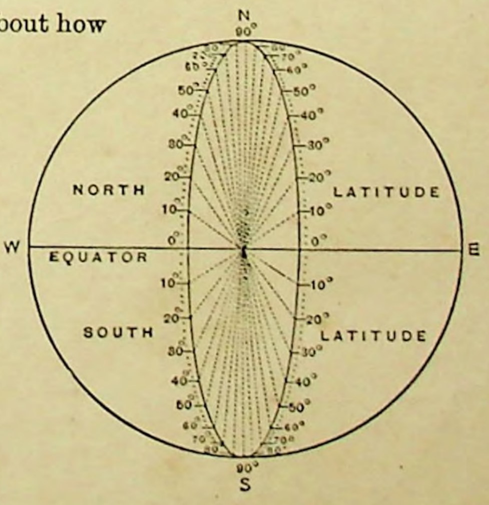
Every circle, both large and small, may be divided into 360 equal parts, each of which is called a *degree*.[1]

How many degrees are there in one fourth of a circle? One fourth of a small circle contains just as many degrees as one fourth of a large one.

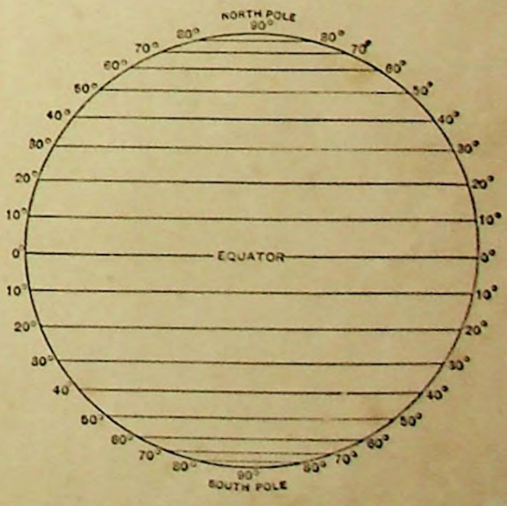
The distance from the equator to either pole is ninety degrees (90°), or one fourth of a circle running north and south round the earth.

Round a globe we can draw any number of circles parallel with the equator. Such circles are called *parallels*. All the places on any one parallel are at the same distance from the equator.

Parallels show how far places are north or south of the equator. We name the parallels in degrees, beginning with the equator as *zero* (written 0°).



Degrees of latitude



Parallels of latitude

A parallel may be at 1°, 8°, 45°, or any number of degrees as high as ninety, from the equator.

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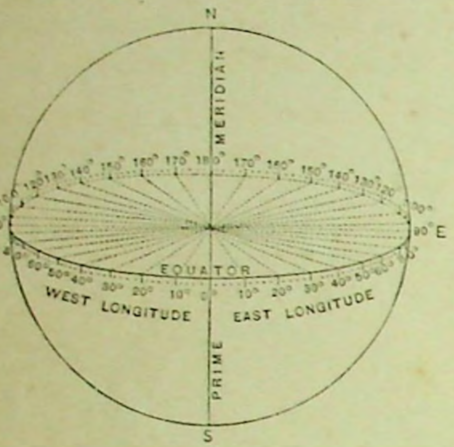
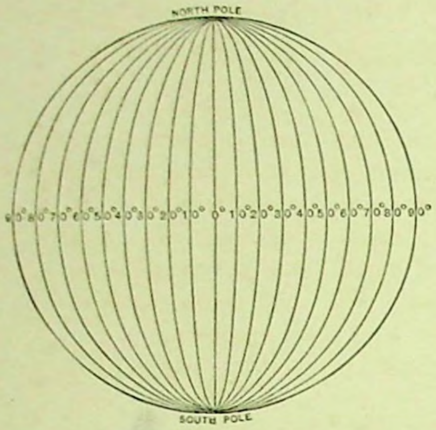
[1] A 60th part of a degree is called a *minute*. A 60th part of a minute is called a *second*. Ten degrees, thirty minutes and forty seconds may be written 10° 30′ 40″.

Thus the city of New Orleans is 30° north of the equator, — written 30° N. It is one third of the distance from the equator to the north pole. *See map of North America, page 65.* But there are many other places round the earth on the same parallel, or at the same distance from the equator.



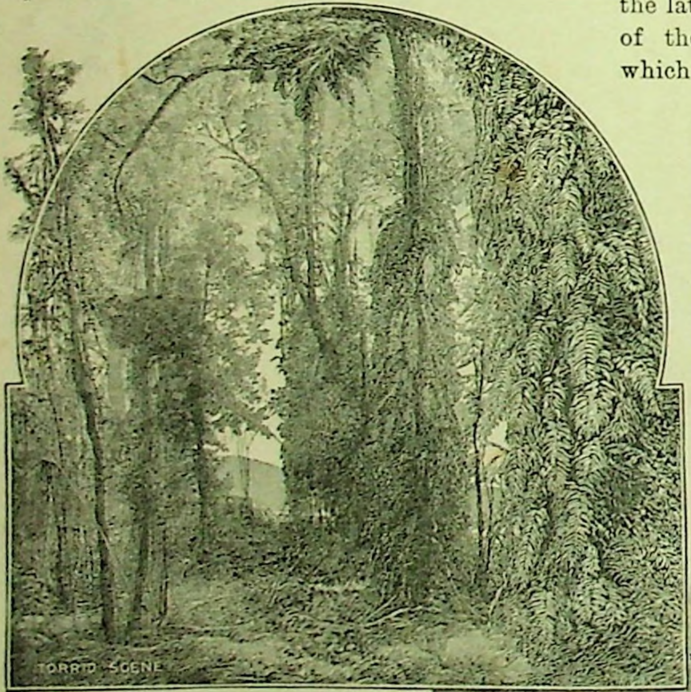
Degrees of longitude



Meridians of longitude

On the globe we can also draw many lines running from pole to pole, north and south. All places on any one of the north-and-south lines have midday at the same time. These lines are therefore called *meridians*, meaning *midday lines*.

We may think of any number of meridians and number them, beginning with any one of them. The line with which the numbering begins is called the *prime meridian*, meaning the *first*. The meridian from which the others are counted is marked zero (0°), just as the equator is the zero (0°) line from which all parallels are numbered north or south.



Ferns growing on trees in India, where the seasons are always hot or warm

The prime or *zero* meridian most commonly used by sailors passes through the observatory of *Greenwich*, a suburb of London. This is known as the *meridian of Greenwich* and is marked 0° on maps. *See map of British Isles.*

The meridians which show degrees are generally numbered from 1° to 180° east from Greenwich, and also 1° to 180° west from the same prime meridian. These numbers count the degrees round any parallel on which a place is located.

Now we can locate the city of New Orleans exactly, by saying that it is 30° north of the equator, and 90° along this parallel west of Greenwich. It is thus one third of the distance from the equator towards the north pole, and one fourth of the way round the world west from Greenwich. This may be written 90° W. and 30° N.

The number of degrees that any place is north or south of the equator is called the *latitude* of that place. The number of degrees east or west of any chosen meridian is the *longitude*.

Latitude means *breadth*; longitude means *length*. In ancient times, when nearly all the shipping in the world was on the Mediterranean sea, people thought of the long way as east and west; the broad way as north and south.

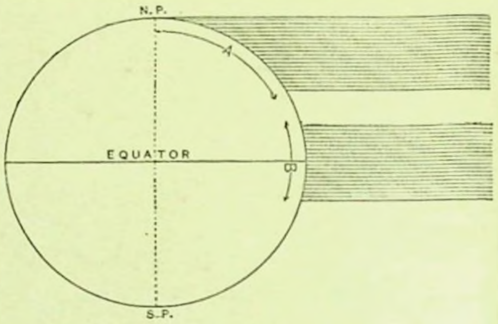


Fig. 1

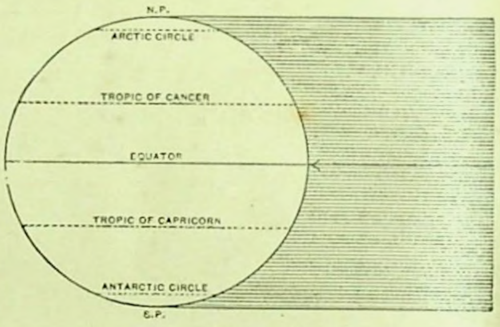


Fig. 2

Thus distance *in degrees* east or west from any line is longitude; distance *in degrees*[1] north or south from the equator is latitude. What is the latitude of New Orleans? What is its longitude? Find out the latitude and longitude of the town or city in which you live.

Helps: — What does climate mean? What is a degree? How many degrees between equator and north pole? What are parallels? What do parallels show? How are they named? What are meridians? What is meant by prime meridian? What prime meridian is most used by sailors? How are meridians numbered? What is latitude? Longitude? How may you locate a place on a map or on the earth?

Topics: — Climate; degrees; parallels; meridians; Greenwich; latitude; longitude.

Caught in the ice in Baffin bay, where seasons are always cold or cool

Eskimo boy

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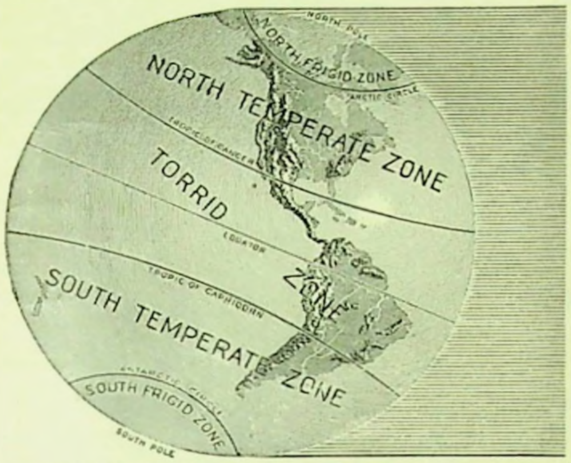
[1] To Teachers: — Many teachers may wish at this time to teach pupils the relation between degrees and miles. The important facts to be kept in mind are that degrees of latitude are practically equal, and that each contains 60 nautical or 69⅙ common miles. This is also the length of a degree of longitude on the equator; but degrees of longitude vary with distance from the equator.

19. Change of Seasons[1]

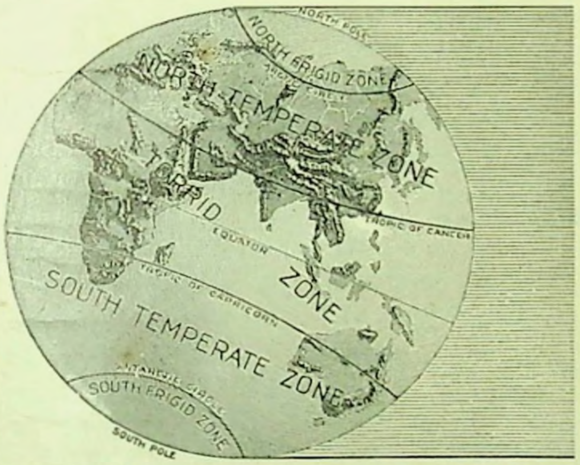
The sun is a very hot globe, more than a million times as large as the earth. This great globe is very far away, yet it keeps the earth warm enough to support the life that is on it.

The average distance of the sun from the earth is about 93,000,000 miles.

If, when Columbus set sail on his first voyage to America, some object could have left the sun and traveled steadily at the rate of twenty miles an hour towards the earth, that object would still be many million miles away from the earth.



(A) New World: first day of northern summer



(B) Old World: first day of northern summer

The sun's rays shine through clear air without warming it very much, but they warm the clouds and the dust in the air, and also the surface of the land and the sea. All these help to warm the air about them, but the land and the sea warm the air much more than the clouds and the dust do.

When the sun is highest in the sky about noontime, its rays heat the earth more than late in the afternoon or early in the morning, when they are more slanting.

Fig. 1 on page 24 shows how the sun shines on different parts of the earth. Over the line B all the rays are nearly vertical. Over the line A the rays strike the earth with much greater slant. As many rays shine on B as on A, but the slanting rays spread over more surface and, therefore, cannot heat it so much. The more nearly vertical the rays are, the greater their heating power, because more rays can reach a space of a given size.

Fig. 2 shows the same fact. It is just as far along the surface from the line marked *Arctic circle* to the north pole as it is from the line marked *tropic of Cancer* to the equator, but compare the number of rays shining on each.

Once a year the earth moves or *revolves* round the sun, in an almost circular path. This path of the earth is called its *orbit*.[2] The journey round the sun is called the *revolution* of the earth.

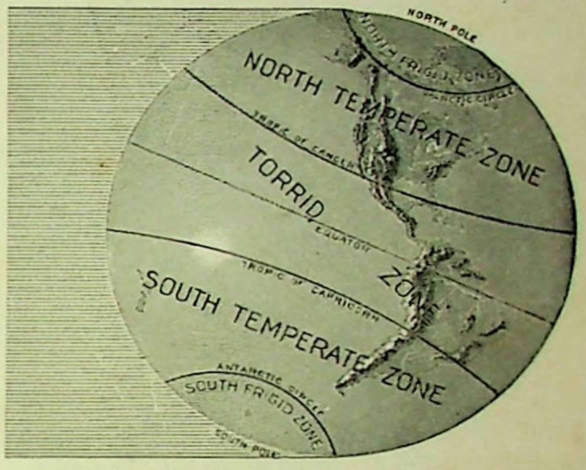
What other motion of the earth have you studied? *See lesson 2.* What is the cause of day and night?

The earth's axis does *not stand upright* from the orbit or path, but *leans over* about one quarter from the upright. As the earth goes round the sun, the *axis always points to the same spot* far off in the sky, near the north star.

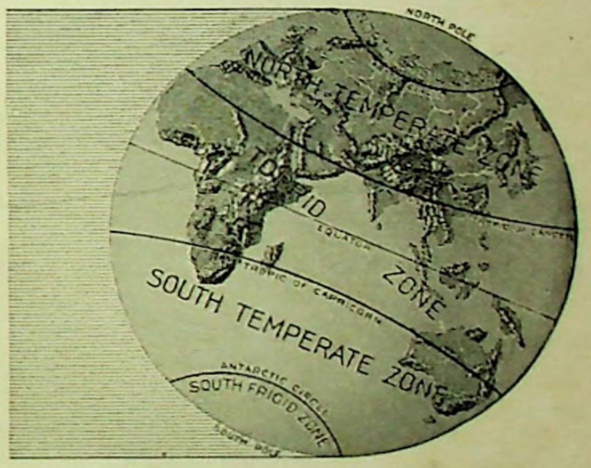
Maps (A) and (B) on this page show how the warm sunshine strikes North America, Asia and other lands north of the equator when that part of the earth leans towards the sun's rays. The same map shows how slanting the rays are at that time on the lands south of the equator.

Maps (C) and (D) show how the sunshine reaches the earth when it has moved round to the other side of the sun. The lands south of the equator now feel the strong rays, while the lands north of the equator have the weaker or slanting rays.

Some evening at home, with a ball and a light placed near the middle of a room, you can see how all this happens. Run a long needle through the ball, for an axis. Hold the ball a little way off from the lamp, but as high as the light, and turn the ball so that one end of the needle points towards one of the upper corners of the room. Look and see which part of the ball is lighted.



(C) New World: first day of northern winter



(D) Old World: first day of northern winter

Then move the ball slowly round the light, keeping the ball on a level with the light, and also keeping the needle pointed always towards the *same corner* of the room. You will see the pole, where the needle enters the ball, go into darkness part of the way and come out into the light the rest of the way.

Thus it is with the earth. The axis always points to one spot in the sky; and as the earth goes round the sun, the sunshine changes slowly from north to south and then from south to north.

The change of sunshine from north to south and then from south to north, as the earth goes round the sun, is called the *change of seasons*. Lands have their warmest weather when they are leaning towards the sun, with the rays more nearly vertical than during the time of coldest weather, when they are leaning away from the sun. Then the rays are more slanting.

Thus, the slanting of the earth's axis, and the fact that it always points to one spot in the sky, as the great globe travels round the sun, cause the *change of seasons*. If the axis stood upright, the rays would always fall on a place at noon with the same slant, and there would be no change of seasons.

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[1] The change of seasons and the length of days and nights are subjects that can best be explained by the teacher with a globe in hand.

[2] The orbit is an ellipse, but differs very slightly from a circle. *See page 26.*

When lands have spring and summer they are leaning towards the sun; when they have autumn and winter they are leaning away from the sun. The axis does not change its direction, but the earth moves round from one side of the sun to the other, so as to bring the strong rays first on one side of the equator and then on the other.

The large diagram on this page shows the *true form of the earth's orbit* and also the position of the earth in its orbit each month of the year. Look at the little globe for March; the sunshine covers one half the earth from pole to pole, for the sun is over the equator. At this time the season of spring begins in the north.[1]

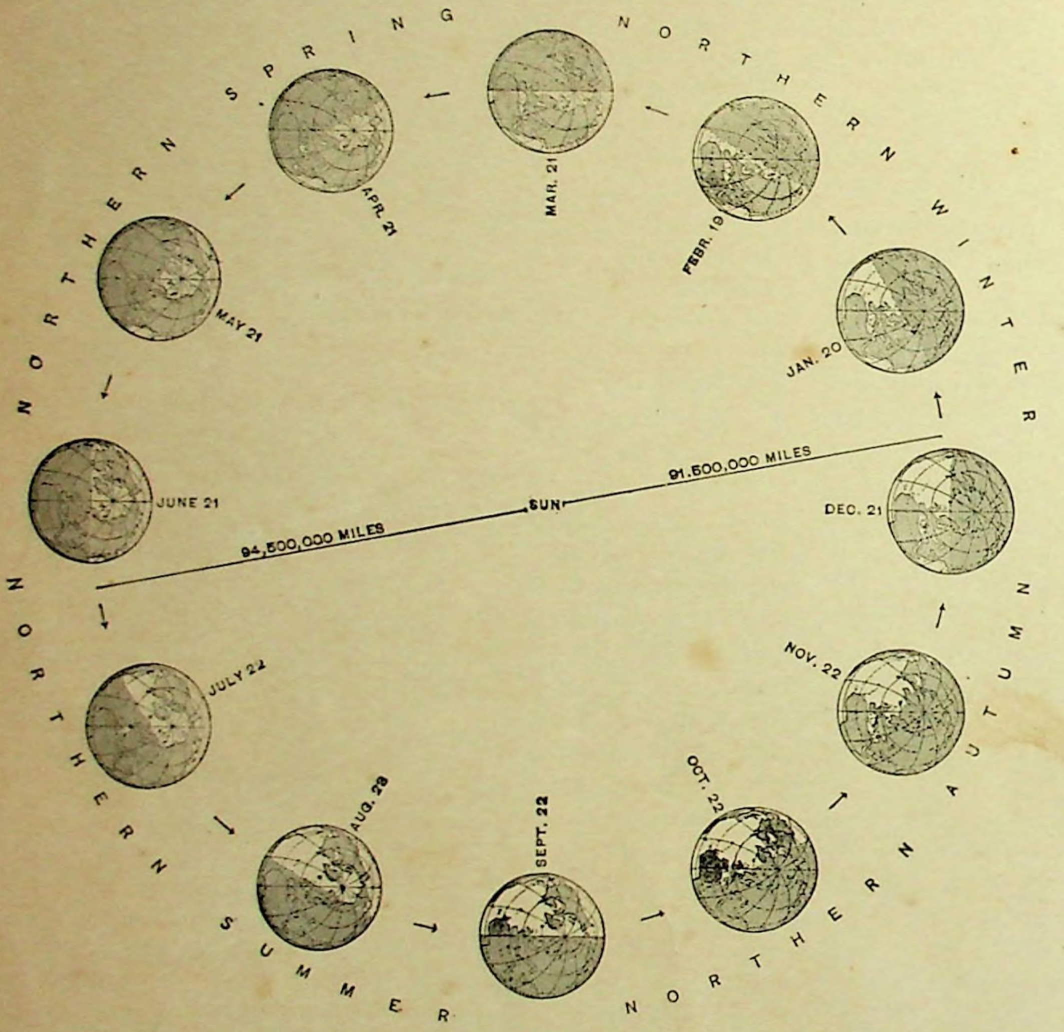

Diagram showing true shape of the earth's orbit; also position of the earth each month in its orbit

The globe for April shows the sunshine reaching even beyond the north pole, for the northern hemisphere is leaning slowly towards the sun. The south pole has gone into darkness. In May the north pole has come farther into the circle of sunlight, while the south pole has sunk farther into the circle of darkness that covers the other side of the earth. In June the sunshine covers more of the northern lands than at any other time of the year, and in this month the summer begins in the north.

But now a change takes place, and in July and August the sunshine grows less and less north of the equator. The north pole is moving slowly back towards its long night, or time of darkness, but the south pole is coming back towards the light. At last, in September the circle of light and warmth is back just where it was in March; the sun is then over the equator, and autumn begins in the north.

From now on the north pole goes into darkness, as the northern lands turn farther away from the sun. October and November find the sunshine still less in the northern hemisphere. In December the northern half of the earth is turned farthest from the sun, and the north pole is deep within the circle of darkness. In this month winter begins in the north.

Now the north pole begins to move slowly towards the light. January and February carry the sunshine farther north, and in March the sun rises once more in sight of the north pole and brings back the spring to the northern lands.

South of the equator the seasons are just opposite to those of the north. When spring begins in the northern hemisphere autumn begins south of the equator; when it is winter on one side of the equator it is summer on the other.

When the sun is over the equator the light reaches both poles. Then the days and nights are each twelve hours long over the whole earth.

When the sun is north of the equator the hours of sunshine on that side of the equator are longer than the hours of darkness; but when the sun is south of the equator the nights in the north are longer than the days.

During the northern spring and summer the light never leaves the north pole and the day there is six months long. It is then night at the south pole. During the northern autumn and winter the north pole has its long night and the south pole its day.

The large diagram shows that not only each pole but also the region round it has long periods of light and of dark.

Helps: — What is meant by revolution of the earth? How often does the earth revolve? How often does it rotate? What is the earth's orbit? What are planets? What is position of the earth's axis? Where does it point?

What is meant by change of seasons? How can you illustrate change of seasons? What causes change of seasons?

How does northern hemisphere lean in summer? In winter? How far north does sunlight reach on first day of northern spring? When does summer begin in the north? Autumn? Winter?

When it is summer north of equator what season is south of it? When spring is opening buds and blossoms far north of equator what change is taking place in lands far south? Describe days and nights round poles.

Topics: — Revolution; orbit; position of earth's axis; meaning of change of seasons; how illustrate change of seasons; cause of change of seasons; area of sunlight when each season begins; seasons on opposite sides of equator; days and nights round poles.

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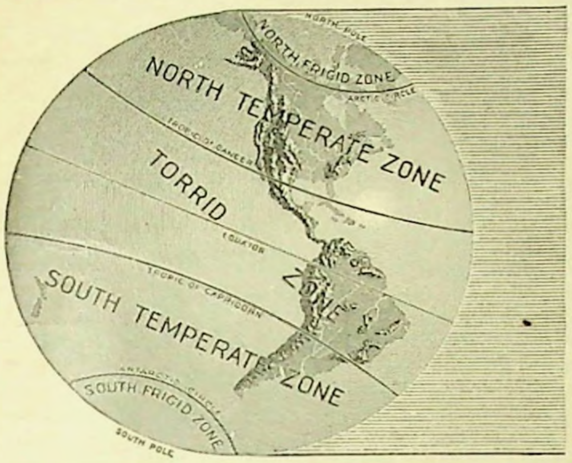
[1] Spring begins about March 20; summer about June 21; autumn about September 22; winter about December 21. Though these are the accepted dates, the true time is indicated by the sun's position over the equator or the tropics; and the fact that leap years have an extra day makes the above dates slightly inaccurate.

20. The Zones

We have seen that the axis of the earth leans about one quarter from the upright. The exact amount of the leaning or inclination of the axis is 23½°. When the earth is in that part of its path which brings the northern end of the axis nearest the sun, the strongest rays shine straight down on a line at about one fourth of the distance from the equator towards the north pole. This line round the earth, upon which the vertical rays fall when farthest north, is called the *tropic of Cancer*.[1]



Map A, showing vertical rays over the tropic of Cancer

The line upon which the vertical rays fall when farthest south is called the *tropic of Capricorn*.

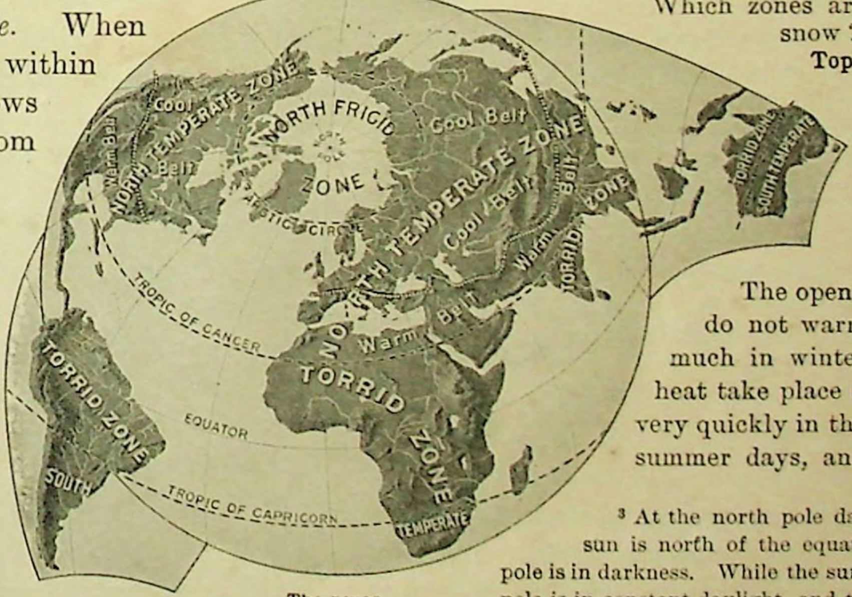
Find on each of the maps on page 25 the exact place where the vertical rays strike the earth.

The tropics are 23½° on each side of the equator. The wide belt of land and water lying between or within the tropics is called the *torrid zone*.[2] This great zone of strong sunshine is more than 3000 miles wide, and spreads round the earth along the equator nearly 25,000 miles.

When the sun is farthest north it shines all day within the *Arctic circle*. When farthest south it shines all day within the *Antarctic circle*. This shows that these circles are just as far from the poles as the tropics are from the equator, namely, 23½°. The Arctic and Antarctic circles are known as the *polar circles*.

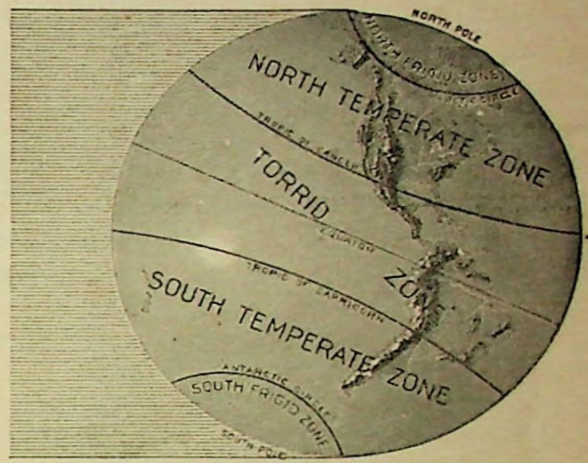
Map A on this page shows the limits of light when the sun is vertical over the tropic of Cancer; the light reaches just to the polar circles on either side; but in the north it reaches the farthest edge of the Arctic circle and sheds its light over all the land and water within the circle. In the south the light reaches only the outer edge of the circle, and all within is dark and cold.

Map B on this page shows that when the sun is over the tropic of Capricorn the region within the Antarctic circle has sunshine, while darkness spreads over the Arctic circle.



The zones

As the sun shines farther and farther north, and the earth turns daily on its axis, there is a growing cap or circle of constant daylight round the north pole. When the sun is farthest north this cap of constant light covers all the land and sea within the Arctic circle. But as the sun seems to move away from the tropic of Cancer the light within the polar circle of the north fades slowly away, and when the sun reaches the tropic of Capricorn the region within the Arctic circle is in darkness. As the light leaves the frozen region within one polar circle it reaches more and more into the other.[3]



Map B, showing vertical rays over the tropic of Capricorn

The region within the Arctic circle is called the *north frigid zone;* the *south frigid zone* is within the Antarctic circle.

The Arctic ocean includes the part of the sea within the Arctic circle; the Antarctic ocean, the part within the Antarctic circle.

The broad belts of land and sea reaching round the earth, between the tropics and the polar circles, are the *temperate zones*. One is *north* and the other *south*.

Helps: — Where is tropic of Cancer? What is it? Where is tropic of Capricorn? Describe torrid zone. Name polar circles and locate each.

What zone lies within tropics? Within each polar circle? What lines bound north temperate zone? South temperate zone? What zone includes hottest parts of earth? Which zones are mostly regions of ice and snow?

Topics: — Tropic of Cancer; tropic of Capricorn; torrid zone; polar circles; frigid zones; temperate zones.

21. Seasons of the Zones

The open oceans and the air over them do not warm much in summer nor cool much in winter. The greatest changes in heat take place over wide lands. These heat very quickly in the strong sunshine of the long summer days, and they cool very quickly in the long winter nights. The larger the land area, the greater is the difference in the interior between its warm and its cold seasons.

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[1] The word *tropic* means *turning place*, and applies to the line over which the sun *seems* to turn backward on its journey. *Cancer*, meaning *crab*, and *Capricornus*, meaning *goat*, are names of groups of stars through which the sun long ago seemed to pass when over the tropics.

[2] Torrid means *parched* or *hot;* frigid, *cold;* temperate, *moderate*.

[3] At the north pole daylight lasts six months, while the sun is north of the equator. During that time the south pole is in darkness. While the sun is south of the equator the south pole is in constant daylight, and the north pole is in darkness.

At the polar circles the longest period of light or of darkness is twenty-four hours. The Arctic circle has its longest daylight when the sun is over the tropic of Cancer.

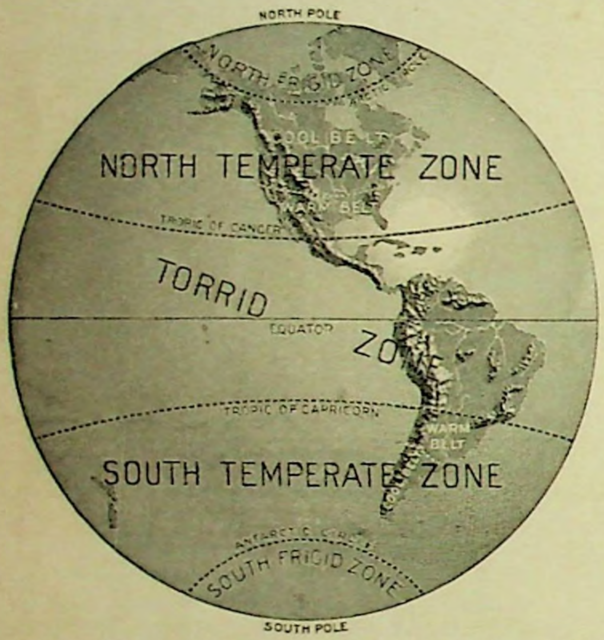
Between the polar circles and the poles the longest periods of daylight vary from twenty-four hours to six months. Each place has only one of these long days yearly, but it has also many days or periods of light less than twenty-four hours long. The nearer the poles, the longer the great period of daylight lasts.

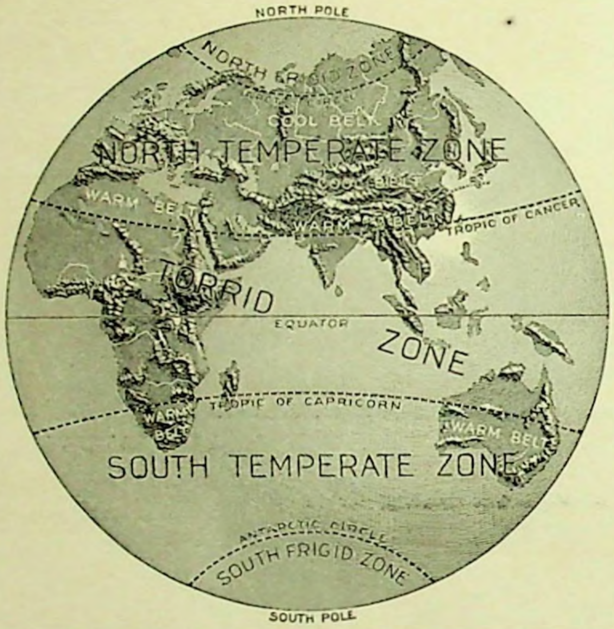
The two polar regions have, of course, the same number of light and of dark periods. The longest period of daylight in any place within either of the polar circles lasts during the longest period of darkness in some place just as far within the other polar circle.

Frigid Zones. The rays that enter the frigid zones are slanting and weak. The air there is always cold or cool, and ice covers the greater part of both zones. These polar regions are known as the *cold belts*. The cold belts, or frigid zones, have very long and cold winters and short cool summers.

During the long winter nights how cold the air of these regions must become! Ice and snow cover the land and almost all parts of the polar seas. Only a small portion of the Arctic ocean is kept open by water drifting from the warmer parts of the Atlantic.

Even during the long daylight of summer the air of the cold belts cannot become very warm, because most parts of the land and the sea round the poles are covered with ice and snow, and a large part of the sunshine is taken to melt a portion of this frozen cover.





The few people living within the northern cold belt are found mostly near the shores past which the warmer waters drift from the south. These people get their food mainly by hunting or fishing or by tending herds of reindeer. No people live in the cold belt of the south.

Brilliant lights, called the *aurora* or *northern lights*, sometimes appear in the polar skies, and are also seen from places far beyond the frigid zones. The aurora diminishes the darkness of the long polar nights.

Temperate Zones. Between the frigid zones and the torrid zone lie the temperate zones. These zones are very wide. Over the parts near the tropics the sunshine falls with not very much slant; but over the parts nearer the polar circles the rays fall with more slant. We may therefore divide each temperate zone into two heat belts, — a *warm belt* lying next to the hot belt, or torrid zone; and a *cool belt* next to the cold belt, or frigid zone.

In the north temperate zone the line which divides the warm belt from the cool belt crosses east and west about through the middle of the United States; and in the Old World the line runs about east and west along the main highlands of Europe and Asia.

We need to divide the temperate zones into the warm and the cool belts, in order to study the groups of fruits and other products, which differ widely in the two belts.

In the south temperate zone nearly all the land, except the very southern parts of the continents, are in the warm belt.

Between the heat belts there are no sudden changes from hot to warm, from warm to cool or from cool to cold. All the way from the belt of greatest heat to the places of greatest cold, there is only a very gradual change.

In the northern cool belt the lands are very wide. There the winter days are short, and the sunshine of that season is slanting and weak. The winters are therefore very cold, especially in the northern part, where snow covers the ground for several months each year, and where heavy frosts are common during the spring and autumn.

During the summer the days of this cool belt are long, and the sun's rays are not very slanting, except far north. The summers thus become very warm, especially in the southern half of the belt.

In the cool belt of the south there is not much land. The air over the oceans remains steadily cool, while over the narrow lands it varies only from cool to warm.

The lands in the northern warm belt are wide, but the days and nights do not differ much in length, and the sun's rays are never very slanting. The winters on the land are cool but not cold. The summers are very hot.

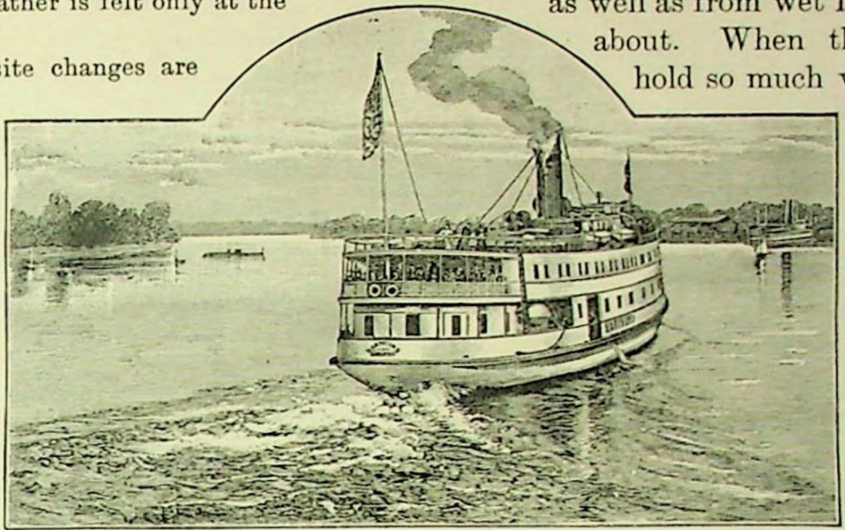
The winters and summers of the lands in the southern warm belt are well marked, but as the lands are small compared with the oceans in the same belt, the change from winter to summer is not so great as in the warm belt of the north.

Torrid Zone. In the torrid zone the sun's rays are vertical, or nearly so, at noon every day. Thus, the slant of the sunshine varies but little. The days and nights are always about equal. There the change of seasons is very slight, and there is no winter. The air over the lands of this zone, except of course high lands, is hot or warm all the year. This zone is often called the *hot belt*.

As the position of the sun shifts north and south, the weather of all the heat belts shifts with it, back and forth, once a year.

During our summer hot weather reaches beyond the torrid zone and spreads over the warm and part of the cool belts; the warm weather shifts into the cool belt; the cool weather moves into the cold belt; the belt of cold weather round the poles becomes smaller. During our winter the cold weather of the northern cold belt spreads far southward over the cool belt; the warm belt then feels the cool weather; and the warm weather is felt only at the borders of the hot belt.

South of the equator the opposite changes are meanwhile taking place. When the warmer weather spreads northward over the belts north of the equator the cooler weather follows it from the regions south of it; but owing to the smallness of the southern lands and the vastness of the oceans, the seasons south of the equator do not present great extremes of heat or cold.



A river of the cool belt in summer

In all the heat belts the high plateaus and the mountains are cooler than the lowlands. Even near the equator the summits of very high mountains are covered with snow all the year.

By climbing any very high mountain near the equator, a person may feel the same changes in climate as in going from the equator to either pole. Five miles up the air is as cold as it is five *thousand* miles along the surface of the earth towards either pole.

Not all places in the same latitude have the same seasons. Some are in highlands, others in lowlands; some are near the sea, others far inland; warm winds blow over some, cold winds over others. We shall study these differences, under the various countries.

Helps: — Tell what you know about the sun. How is the air heated? Why does not sun heat all parts of earth alike? Describe seasons of frigid zones. Why are these belts so cold? Why cannot air over these belts become very warm in summer? What have you learned about the few people in cold belt of north? What is meant by aurora?

Why do we need to divide temperate zones into warm and cool belts? In north temperate zone what line separates cool belt from warm belt? In what heat belt are nearly all lands of south temperate zone?

Compare lands in cool belt of north with those in cool belt of south. Describe seasons in cool belts; in warm belts; in hot belt, or torrid zone. Describe shifting of weather of heat belts with sun. Why do not all places in same latitude have same seasons?

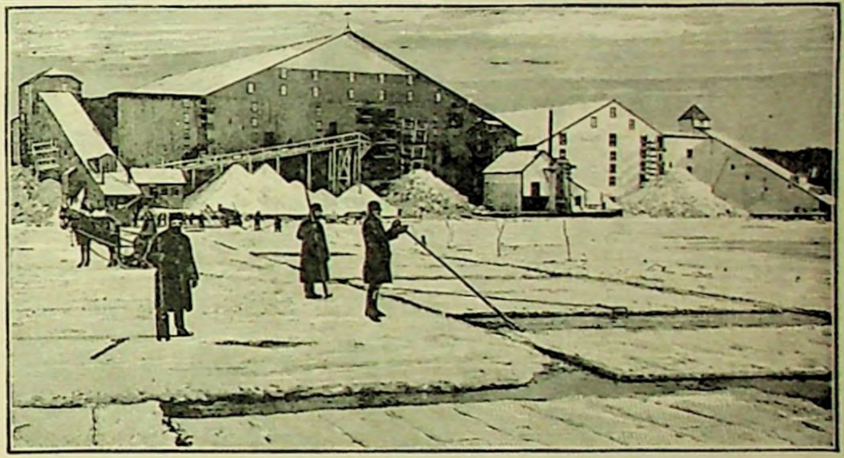
Desert rock worn smooth and round by blowing sand

Topics: — Sun; how air is heated; seasons over land and sea; seasons of frigid zones, or cold belts; people of northern cold belt; aurora; cool belts; warm belts; torrid zone; shifting of weather with sun; why places in same latitude have different seasons.

22. Winds and Rainfall

Vapor rises from the oceans and other bodies of water, as well as from wet lands, and the winds carry it about. When the air is cooled it cannot hold so much vapor as when it is warmer. When cooled enough the vapor in it forms clouds from which rain or snow falls.

When the air is growing warmer it can hold more and more vapor, and it then takes up more vapor and dries the lands over which it passes. Winds that are growing warmer as they blow towards warmer parts of the earth are therefore called *drying winds*.



Cutting ice on a river of the cool belt in winter

Cold air weighs more, or is heavier, than hot air. Just as a stick, being lighter than water, will float on it, so warm air will float on cool air. The cooler air flows towards and creeps under the warmer air, pushing it upwards.

Not all parts of the earth are heated alike, and the air is therefore kept in motion. The air from the cooler parts is flowing towards the warmer parts. Some of the currents of air move along the earth's surface, and others flow far above it. We call the surface currents *winds*; they are very useful, as we have just learned.

Winds blow from cold parts of the earth towards the warmer parts, from cold seas to warm lands or from warm ocean currents to cold lands, from grassy plains to hot deserts, from cool mountains into warmer valleys or from cool shaded valleys up the bare and hot slopes of sunny foothills.

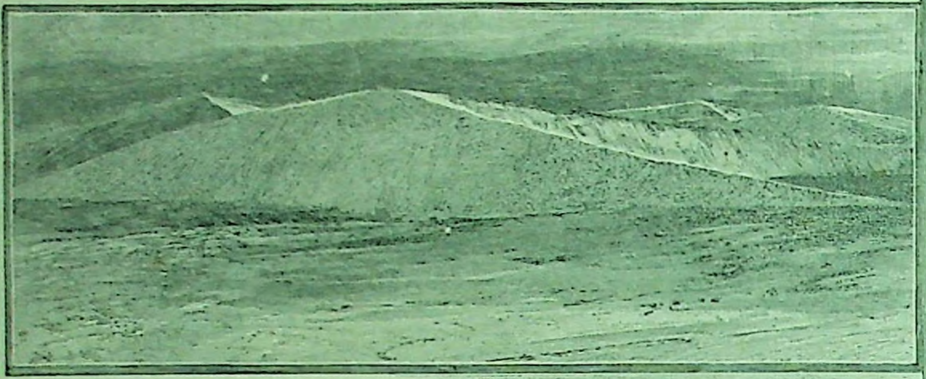
When we think of the many kinds of surface that help to warm or to cool the air, it does not seem strange that the winds do not always blow with equal force or in the same paths. With frozen lands and seas, parched deserts, cool grassy plains, shady forests, warm and cold ocean currents, snow and rain, flying clouds and, above all, the shifting sunshine that causes the seasons, — with these and other causes of difference in heat, the air finds little rest.

Strong winds cannot reach soil that is covered with grass or trees, but in dry lands where there are but few plants the winds sweep over the ground and scatter dust and sand far and wide. Coarse sand is drifted along like dry snow in winter.

The grains of sand are blown against one another and against bare rocks. Thus, both the sand and the rocks are ground to dust.

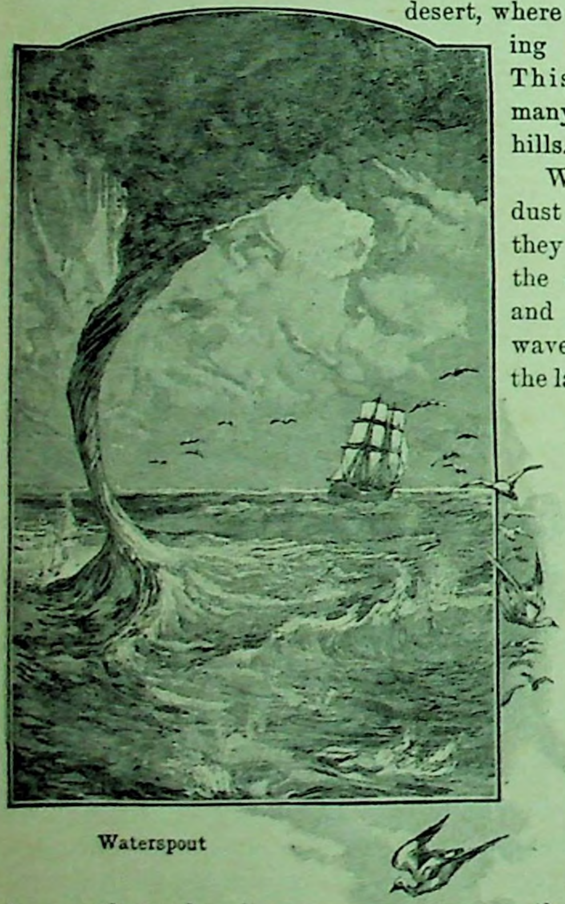
In deserts, where drifting sand is plentiful, it gathers in the form of hills called *dunes*. Some of these dunes, or hills of drifted sand, are from three to six hundred feet high. One of the pictures on this page shows several desert dunes.

Dunes are also found on sandy shores. Waves throw sand upon the beaches, and the winds may then drift it inland. Fields, forests and villages are sometimes buried by drifting sand.



Sand hills or dunes in a desert

Under the sands of deserts lies the bed rock. The winds often blow away the grains of sand from the high parts of the bed rock, as soon as they weather or crumble. Parts of deserts may thus consist of bare rocky hills. See the picture of the wind-swept desert, where the Arabs are resting beside the camel. This picture shows many such wind-swept hills.



Waterspout

Winds not only blow dust and sand about, but they also brush along the surface of the sea and make waves. The waves which roll against the land wash stones and sand back and forth on the seashore, grinding them very fine. Thus, the winds help to change the seashores of the earth.

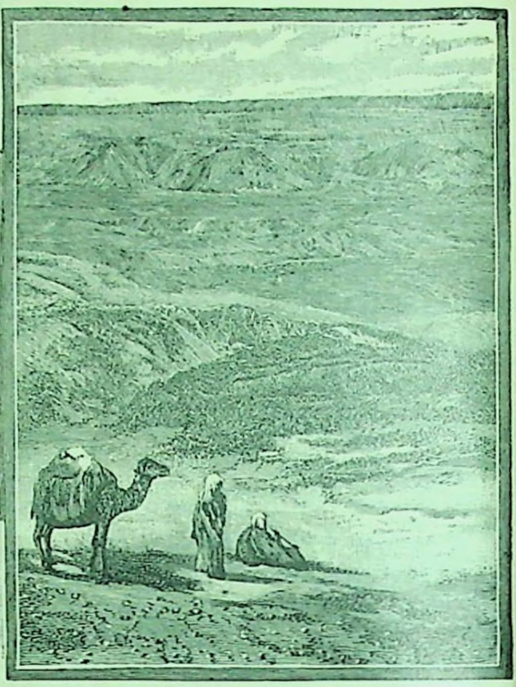
The winds blowing steadily over the sea also make currents in the sea. Warm currents from the hot belt may flow far northward and warm the air that blows over cold lands. We shall study these currents later and shall find that they are very useful to the people even as far north as the Arctic circle.

Moist winds blowing towards cooler lands often give out rainfall. They also shed rains on high ranges that lift up the air and cool it.

Winds carry vapor from the sea to the land and thus help to determine which parts of the land shall yield grain and fruits, and which parts shall remain barren deserts. Winds scatter the seeds of some kinds of plants, and also aid in the flight of birds, by lifting them somewhat as kites are lifted.

If it were not for currents of air there would be no sailing vessels nor windmills; but the winds are sometimes so strong that they wreck vessels and blow down trees and houses.

Under heavy clouds whirling winds over the sea sometimes form funnel-shaped spouts, which seem to descend and join the spray raised from the waves. The long whirling funnels are called *waterspouts*. They are seen most often over the oceans near the equator, but some of them form east of our country, over the warm parts of the ocean. The whirling winds of waterspouts are sometimes strong enough to dismast vessels.



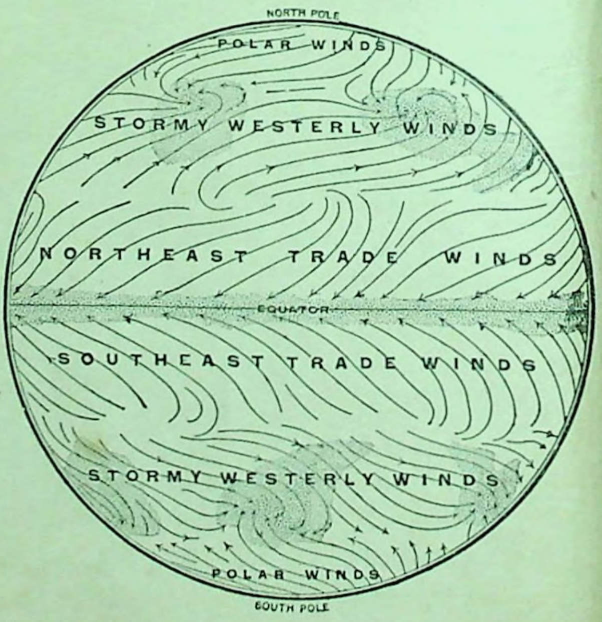
Wind-swept desert

When the air is in motion all its parts are mixed and kept fresh and pure. Perhaps you can think of many other uses of winds.

Winds blow into the hot belt from the cooler belts on both sides. These winds bend to the westward, — those from the warm belt of the north bend towards the southwest; those from the warm belt of the south bend to the northwest.

These winds that blow westward in the hot belt are known as the *trade winds*.

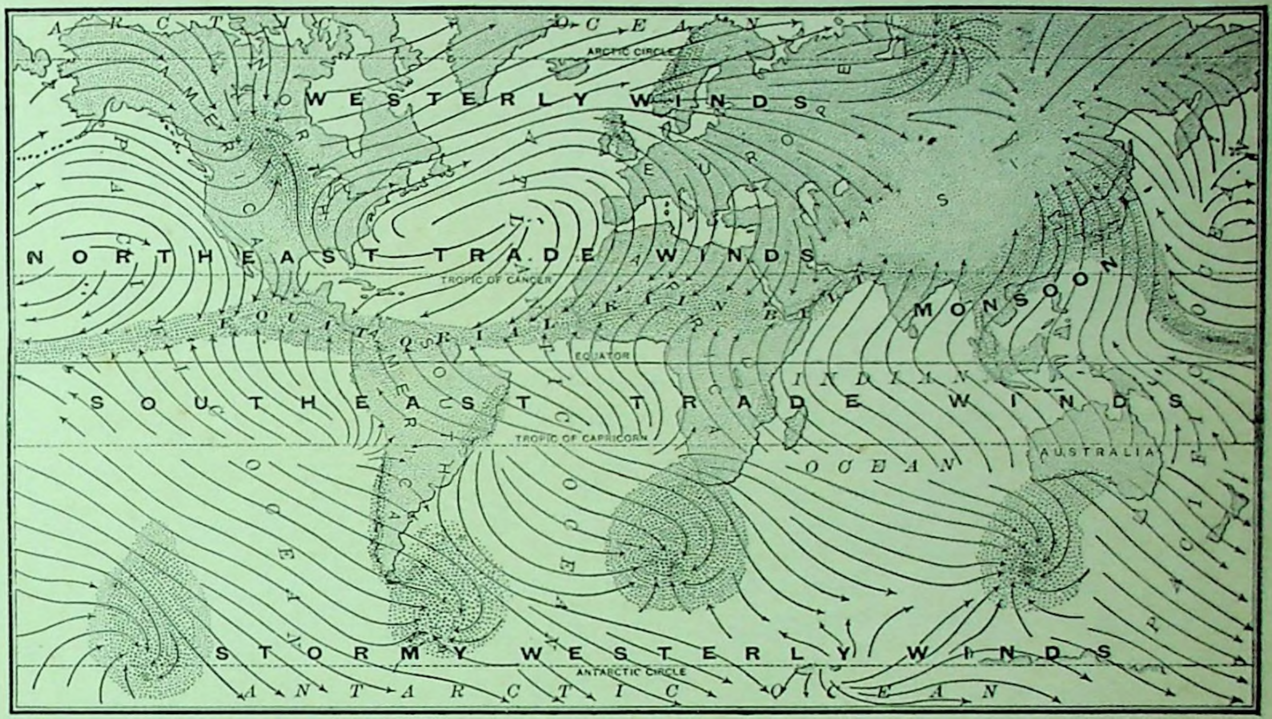
On the oceans they are steady and blow with little change by day or by night. Over the lands they are not so steady, as there are more changes in the heating of the surface. To the people living in the torrid zone these east winds are very refreshing.



General plan of the winds. (The dotted areas indicate rain)

Can you tell by the maps on page 31 what parts of the continents are in the path of the trade winds?

As the trade winds flow into the hot belt, they become warmer and can hold more moisture. They do not give out rainfall unless they are chilled on the way. Some lowlands in the paths of these winds are therefore dry; but the windy sides of highlands in the path of the trade winds receive abundant rains.



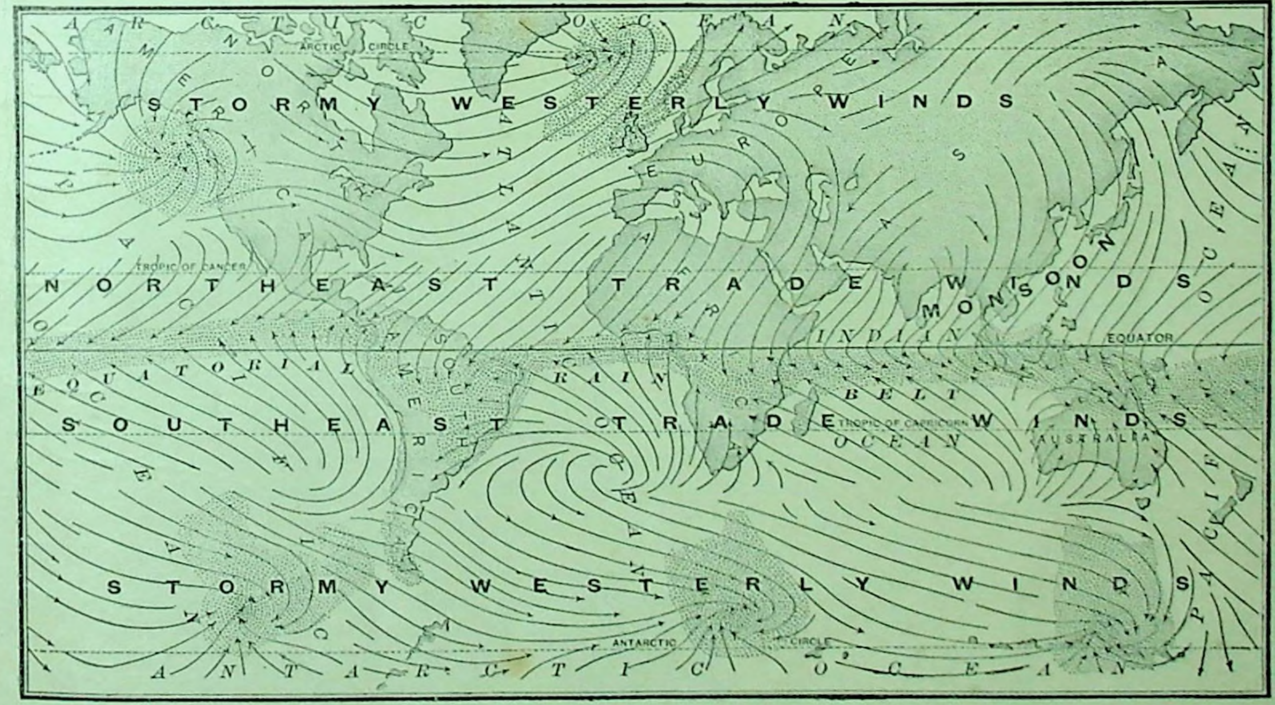
NOTE: — This map[2] shows the winds and rains of the northern summer. Notice that the winds are blowing from the sea towards the interior of the northern continents. The equatorial rain belt is north of the equator.

When air rises to cross highlands it is cooled, and some of its vapor may then form clouds that yield rainfall[1] on the slopes of the highlands.

Some of the great deserts are lowlands on the lee side of mountains in the path of the trade winds.

Along the line of greatest heat, where the winds that enter the hot belt from both sides meet, there is a narrow belt where the winds are weak and often die away to a calm. Much vapor rises in this warm belt of calms, and rains pour down almost every afternoon or evening. As this rainy belt is near the equator, it is called the *equatorial rain belt.*

So much rain falls in this belt of calms that the surface of the ocean there is a little less salt than the ocean under the drying trade winds.



NOTE: — This map[2] shows the winds and rains of the northern winter. The winds are blowing from the interior of the northern continents, outward towards the sea. Most of the equatorial rain belt is south of the equator.

In the warm and the cool belts the winds vary in direction from time to time and often bring storms. They blow mostly from the west, in the opposite direction from the trade winds, and are therefore called *westerly winds,*[3] or *anti-trade winds.*

The storms in these westerly winds carry rains to the highlands and the west coasts of the temperate zone, that is, to the warm and the cool belts. In these belts the winds also blow at times from the east or south or north, and so most of the slopes facing the sea on either side are well watered; but the regions far inland are often very dry.

Between the trade winds of the hot belt and the westerly winds of the warm and the cool belts there are weak winds that are very unsteady and generally bring dry weather. These weak winds are near the tropics, and these lines cross several large deserts.

In the cold belts the winds vary greatly in direction and are very stormy. They are called *polar winds.*

Helps: — Where does vapor come from? What moves clouds? What results when vapor cools? In what state will air hold the most vapor?

What makes waves and currents in sea? Tell some other kinds of work done by winds. What are dunes?

Which is heavier, cold air or warm air? What results when the two flow together? What causes winds? Why do not winds blow with same force all the time? Why not in same paths?

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[1] The term *rainfall* includes rain, snow, hail and all other forms of falling water or ice.

[2] See footnote 3 on page 32.

[3] Winds take the name of the direction from which they come. West or westerly winds blow from the west. The word *anti* means *against* or *opposite.*

What can you tell about trade winds? Where do trade winds give out most rainfall? Why do they dry lowlands in their path? Why do winds give out rains when crossing high ranges? What is meant by rainfall?

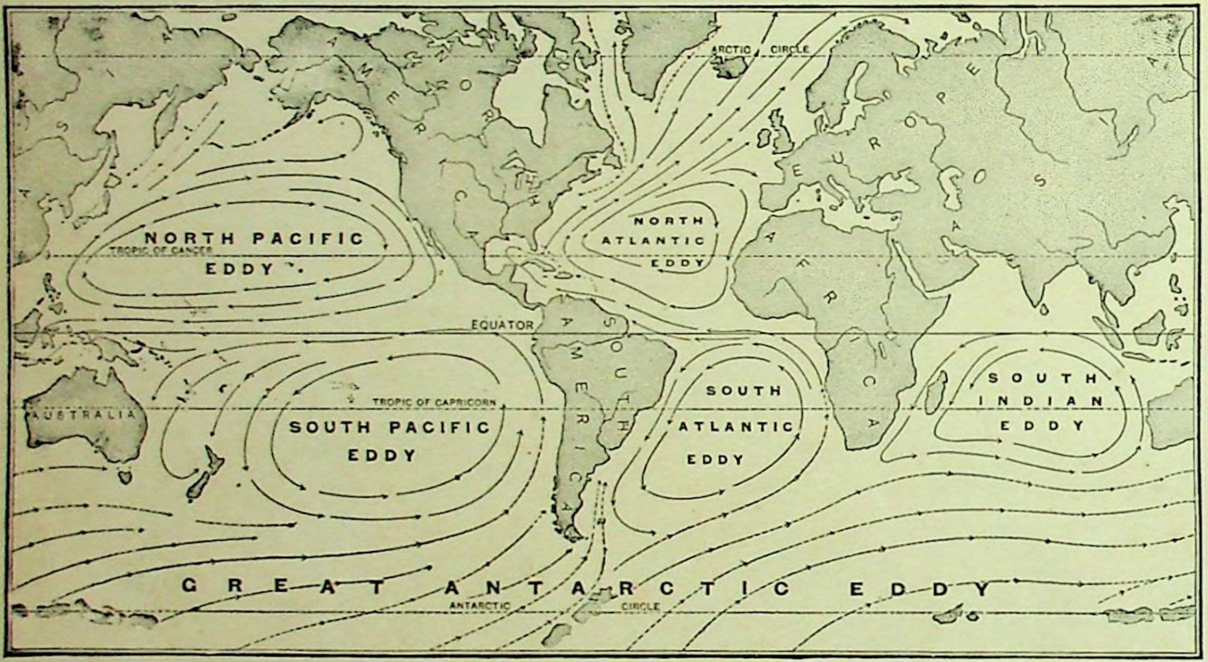
What can you tell about equatorial belt of calms? Describe winds of warm and cool belts. Where does most rain fall in these belts? What do you know about winds and rains near tropics? Near polar regions?

Topics: — Vapor and air; work of winds; dunes; waves and ocean currents; cause of winds; why winds change in force and direction; trade winds; equatorial belt of calms; rains on highlands; winds of warm and cool belts; winds near tropics; polar winds.

23. Ocean Currents

If you blow on the surface of water in a cup or basin, little waves will spring up, and soon a current of water will be set in motion.

Winds blowing day after day for a long time against the waves in the sea cause the surface waters to drift along and thus form *ocean currents*. When they are rapid they are called *streams*.



The arrows point in the direction in which the ocean currents flow.[3] (The dotted lines show polar currents)

In each ocean the currents move in the general direction of the winds over them. The trade winds blow ocean currents westward, and westerly winds blow others eastward.

What then is the general direction of ocean currents in the torrid zone? In the temperate zone?

The lands prevent the ocean currents from moving round and round the earth, and require them to move in vast circles, or eddies, in the oceans.[1]

Part of the water that flows across the Atlantic ocean, under the trade winds of the torrid zone, is turned to the northeast by the coast of North America. This current is rapid in some parts and is called the *Gulf stream*.[2]

The Gulf stream carries much warm water far into the cold seas of the north. The westerly winds blowing along the surface of this water are warmed and carry warmth to the western parts of Europe.

We have learned that the oceans do not cool so quickly as the lands in winter, nor heat so quickly as the lands in summer. The water keeps a more even, or steady, temperature than the land. Winds, therefore, blowing from the sea to the land help to keep the temperature of such land even, without extreme heat or cold.

The trade winds help to refresh the eastern shores of the hot lands of the torrid zone. The westerly winds tend to make steady, or even, the climate of the western shores of the lands of the temperate zone. The good effect of these winds is felt far inland, where there are no mountains near the coasts.

Helps: — What causes currents to flow in oceans? What are swift currents called? In what direction do trade winds blow ocean currents? The westerly winds? Why do not ocean currents go round earth?

What and where is the Gulf stream? Can you tell one use of this stream? What effect have ocean currents on winds that blow along their surface? How then do ocean currents affect lands? What shores receive most benefit from trade winds and ocean currents of torrid zone? From westerly winds and ocean currents of temperate zones?

Topics: — Cause of ocean currents; general direction of currents in torrid zone; in temperate zones; Gulf stream; effect of ocean currents on climate; shores that feel best effects of trade winds; of westerly winds.

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[1] To Teachers: — The arrows on the map of ocean currents show how the waters drift along under the winds. The Atlantic and Pacific oceans have eddies both north and south of the equator, flowing west with the trade winds and east with the westerly winds.

The Indian ocean has a large eddy south of the equator, because the winds are quite steady there; but in this ocean north of the equator the winds blow half the year towards the south coast of Asia, and then the ocean current flows in the same direction. During the other half of the year the winds blow towards the east coast of Africa, and the ocean current turns and flows in the same direction.

The ocean eddies north of the equator move slowly in the direction in which the hands of a clock turn. South of the equator they move in the opposite direction, or against the hands of a clock. In the far south the oceans spread all the way round the earth. There the waters drifting under the westerly winds move slowly towards the east and go all the way round the Antarctic ocean.

Teachers that wish to enter into the study of the monsoons and the changing ocean currents under these winds will find the maps on page 31 complete in all necessary details. The most marked change is, of course, in the Indian ocean.

[2] To Teachers: — For a long time this stream was thought to come from the gulf of Mexico, and hence was given the name *Gulf stream*. Now it is known that only part of the water flows from this gulf, and that even this part, with all the rest, is first drifted slowly across the Atlantic ocean by the trade winds of the torrid zone, and then turned aside by the land.

[3] Fig. 1 shows the plan on which the maps of the winds and ocean currents are made. It is as if the places on the globe were lifted outward, away from the center of the globe, and drawn upon the paper cylinder, which is then cut apart and spread out as in the above map. In such a map, the cold and the cool belts appear much too large, for the polar circles are stretched to the full length of the equator.

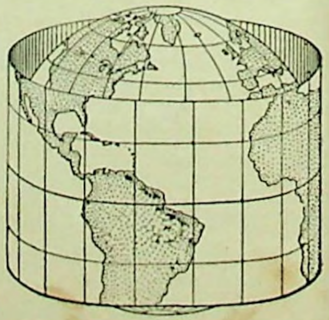
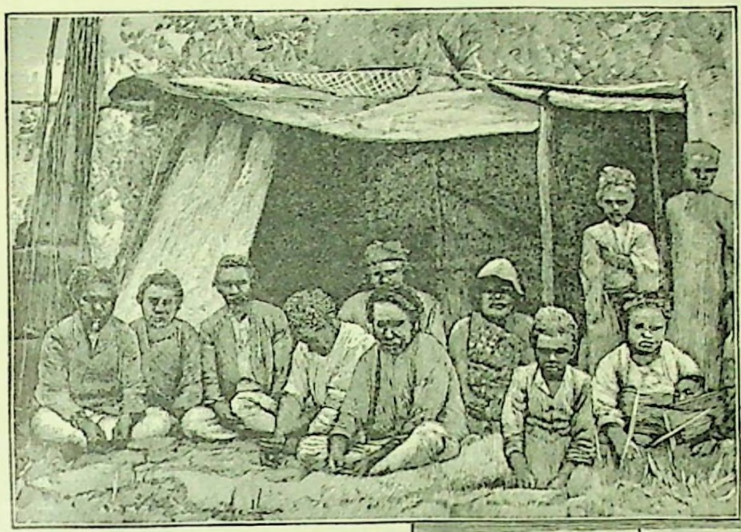


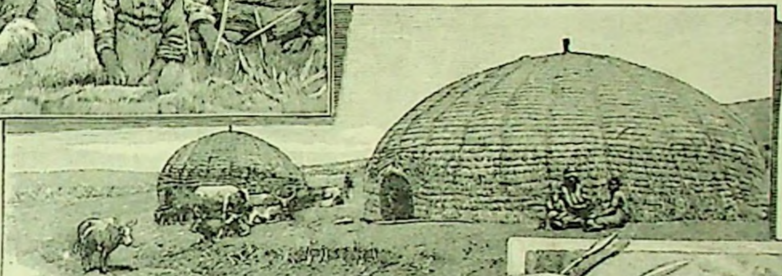
Fig. 1

24. The Black Race

A body of people united under one ruler and subject to the same general laws may be called a *nation*. The land in which a nation dwells is known as a *country*.

If we were to travel through all the countries, we should see many different classes of people. We may divide them into five great groups called *races*. The people of each race differ from those of the other races in color, in size, in the shape of their skulls, in kind of hair and in many other respects.


Black natives of Australia


Huts of Kaffirs, or black people, of South Africa

All of Africa south of the Sahara is the home of the *black* or *Negro race*.

Millions of black people live in groups, called *tribes*, in the forests along the banks of the Kongo and its many branches. Their home is in the hot belt, and they wear but little clothing. They do not need to store up food for winter, because there the days are always hot or warm, and fruits ripen all the year. They do not need houses made of boards, brick or stone, for there is no snow nor ice and there are no cold days. Huts made of grasses or branches serve to cover them at night and during rainy days. On clear days they live mostly outdoors, and there do their cooking and eating.

Black boy of Africa

Negress and child

These people have crude weapons, such as darts, bows and arrows, wooden clubs and blowguns made of hollow reeds. They make fishhooks out of bits of bone. Most of the people live by hunting in the forests and fishing in the rivers. They can also gather wild fruits and some wild grains.

Such natives are very ignorant. They know nothing of books; in fact, they know little, except how to catch and cook their food, build their rude huts, travel on foot through the forests, or in canoes or on rafts on the rivers, and make scanty clothing out of the skins of animals or fibers of grasses or bark. A few of them know how to raise grains in a crude way. Such people are savages.

Negro

The black people that live in the Sudan, south of the Sahara, are more intelligent than those in the tribes along the Kongo, and build houses, weave coarse cloth, make good spears, bows and shields. Many of them also raise cattle and plant grain. If the long rivers of Africa were open to ships from the sea, the poor savages might more easily learn how the white man dresses, prepares food, tills the soil, uses books and defends himself from his enemies; but falls and rapids in most of these rivers greatly hinder ships or large boats from going far inland.

Negress

People of the Negro race are found in nearly all parts of Africa south of the Sahara.

Millions of black people have been taken from their homes in Africa and sold as slaves in other lands. The climate of their native land fitted the Negroes to work in the warm regions of the earth, and there they have been most useful, chiefly to the white people. In most places the slaves have been set free and have generally settled where they worked. Thus, many of the black race have been widely scattered in other lands. Millions are found in all the warmer parts of America, both north and south of the equator.

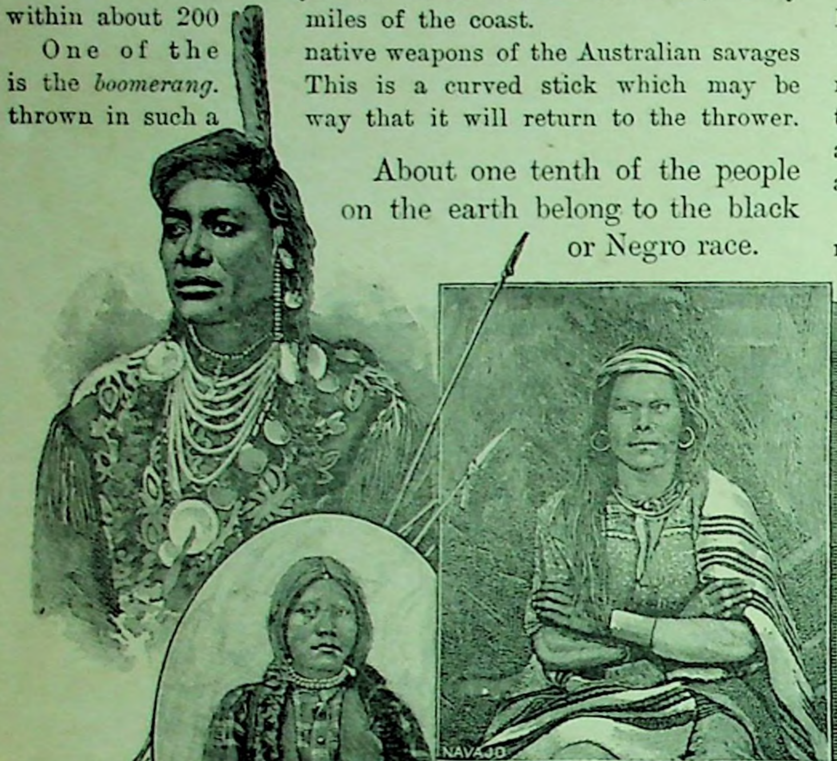
Black woman of South Africa

Australia and the great islands near by are the home of a branch of the *black race*. The Negroes of Africa have broad flat noses, thick lips and black frizzly hair, and their color varies from black to dark brown. The natives of Australia have the same general appearance, but they have curly hair, and their color is dusky brown.

The "blacks" of Australia are savages of a very low grade. They wear but little clothing, and tattoo the skin. Their number is very small compared with the number of white people who now live in that continent. There are only about 100,000 in all the tribes. These are thinly scattered around the continent, chiefly within about 200 miles of the coast.

One of the native weapons of the Australian savages is the *boomerang*. This is a curved stick which may be thrown in such a way that it will return to the thrower.

About one tenth of the people on the earth belong to the black or Negro race.



Indian types

Helps: — What is a nation? A country? What is meant by races of men? How do races differ? Where is the home of black race? Why do Negroes of Kongo valley need but little clothing? Why do they not need to store up food for winter? What are their huts made of? What kind of weapons do they use? What do they eat? What name is given to people in this condition?

Describe black people that live just south of desert of Sahara. Where else are people of this race found? What does lesson say about slaves? In which parts of America are many Negroes found?

Compare black people of Australia with those of Africa. What does lesson tell about Australian black people? What portion of people of the world belong to black race?

Topics: — Nation and country; races of men; home of black race; tribes of Kongo valley; black people just south of Sahara; slaves; black people in America; compare black people of Australia and Africa; describe Australians; where found; number of black people in world.

25. The Red Race

In the hot belt of the New World, in South America, are also found millions of savages, but they belong to the *red* or *Indian race*. They have high cheek bones and straight black hair. Their skin is reddish-brown or copper color.

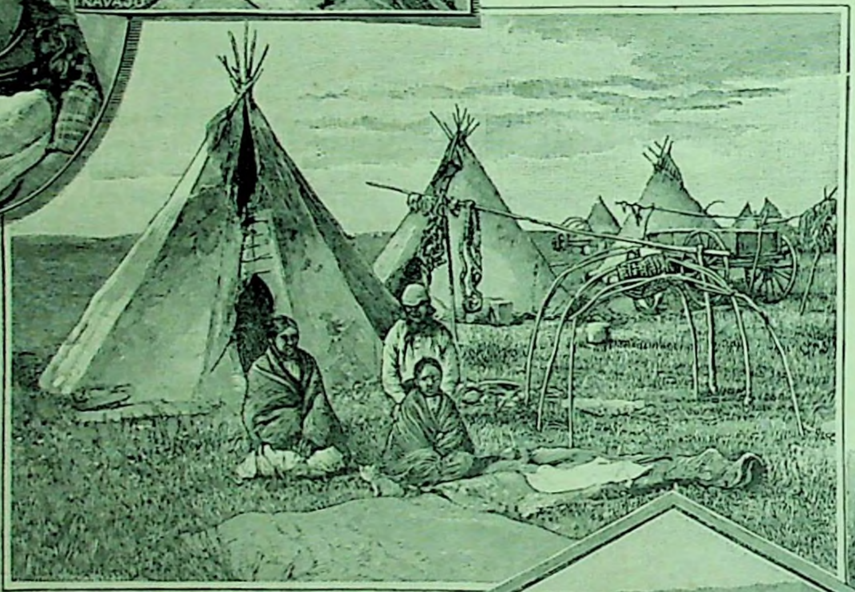
A little later we shall find that many white people live in parts of South America; but the people of the inland parts are mostly Indians.

Many tribes of Indians live in the dense forests along the Amazon river and its branches. In their home life these "red men" resemble the black savages of middle Africa. They wear but little clothing and use about the same kinds of weapons. They hunt and fish, and lead a lazy, shiftless life.

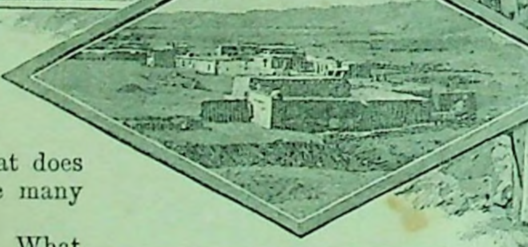
Many Indians live in the towns near the coast and also in the mountains. There they have seen how the white man lives and have become much more intelligent than the natives along the Amazon banks.

When the white men first came to America the Indians near lake Titicaca in the Andes, and also those in the highlands of Mexico, had temples and other buildings of stone. They made cloth and worked in copper and gold, but the use of iron was not known to them. They also built good roads and bridges. These people had made more progress than any others in the red race.

If we leave South America and travel northward along the highland in North America, we shall find millions of Indians, scattered all the way to the border of the United States. Within our country there are only about a third of a million people of the red race. There are some large tribes still farther north, in Canada, but their number is small compared with that of the white people in the same country.



An Indian camp



An Indian village, or pueblo

A Zuñi Indian carrying a vase of water

In the highland of Mexico live to-day several million Indians, as well as millions of white people. The Indians are all much more intelligent than the savages of the Amazon valley, and many of them till the soil, tend cattle, work in the silver mines, attend school and live in houses, just as the white men there do.

Nearly all the Indians of our country live on large tracts of land which have been set apart as homes for the tribes. These tracts of land are called *reservations*.

When Columbus came to America, he thought he had reached a country called *India*, in southern Asia. The natives here were therefore called *Indians*.

The Indians of some tribes often painted their faces and their bodies in streaks of bright red, and the early white settlers in North America called them *red men*. The Indians spoke of the white men as *palefaces*.

Huts of brown people in the Philippine islands. The large animal is a buffalo

At one time the savage Indians hunted over nearly all parts of our country, but most of them were in the eastern half, where game was abundant and where corn could easily be raised. The women of the tribes planted gardens of corn, and the men spent their time hunting deer, buffalo, or bison, and other animals.

The Indians taught the early white settlers how to make soft shoes of deerskin, and canoes of birch bark. From the savage the white man learned also how to make corn grow in a forest. Rings of bark were cut from the trunks of the trees, or the bark was burned off, so that the sap could not flow. The trees soon died, and being without leaves, the warm sunshine could ripen the grain.

It is thought that about as many Indians now live in our country as when the first white settlers came. Most of them now live in houses of wood or brick. They own large herds of cattle, and raise fruit and grain. In some places they have good schools.

Some Indians still live in tents. The earlier tents were made of the skins of animals, but cloth is now generally used. Some build houses of large sun-dried brick, or *adobe*, and in many cases these houses are large enough for several families.

The native weapons are the bow and arrow and the hatchet, or *tomahawk*. The Indian of former days shot the arrow and threw the tomahawk with great skill. Many are now skillful in the use of the rifle.

The red men had no horses before the white men came here from Europe, but many of the Indians are now excellent riders.

As the home of the Indians is in America, they are often called the *American race*.

Brown woman of Philippine islands

Most of the Indians live in the torrid zone, where most of the Negroes also live. There are thought to be about seven times as many Negroes as Indians in the world.

Helps: — Where are Indians found? Describe them. Describe Indians of valley of Amazon; ancient Indians of Western highland of South America and Mexico. In what parts of North America are red men found? Describe Indians now in Mexico.

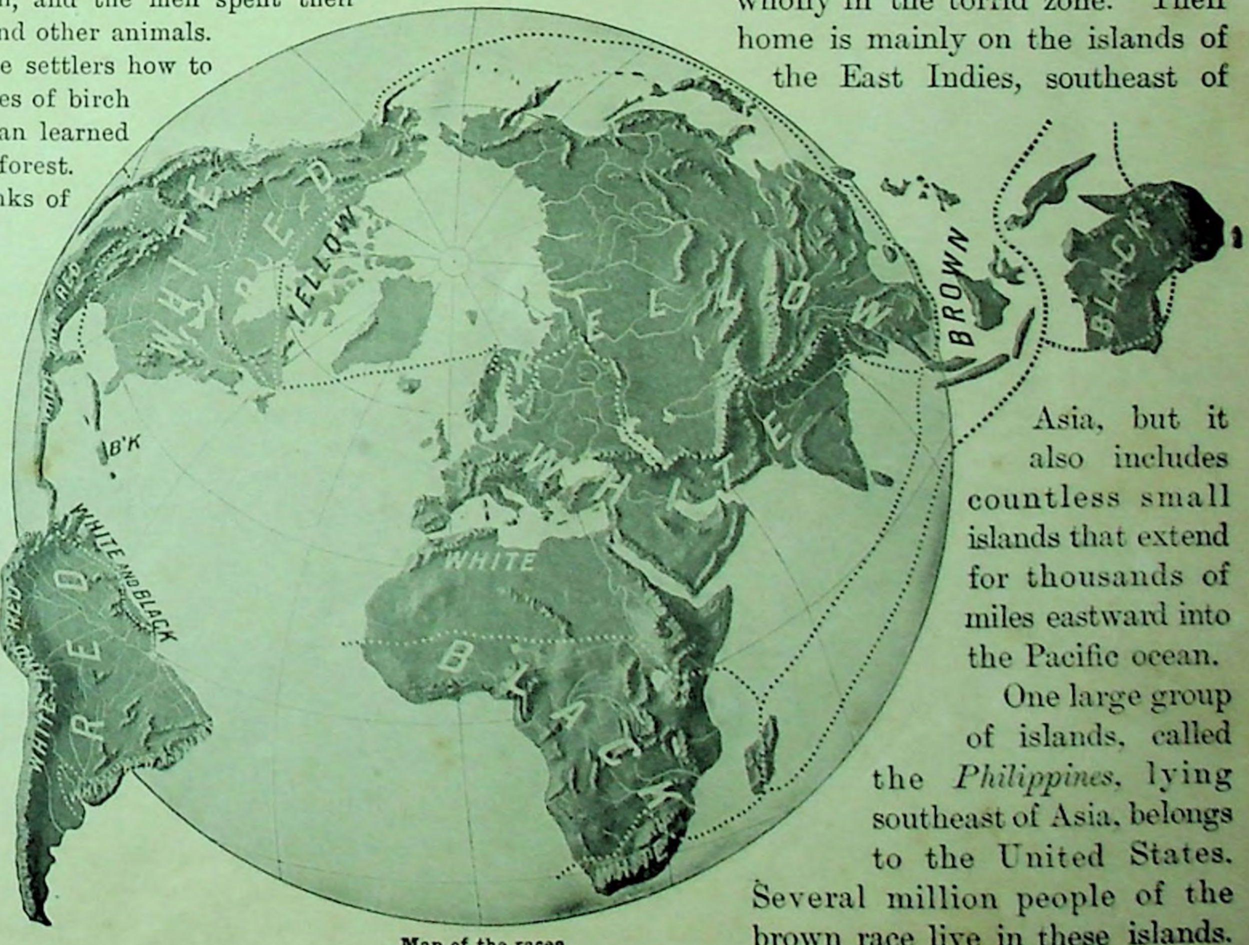
What is a reservation? Why are Indians called red men? What did Indians teach palefaces? What does text say about homes of Indians in United States? Name native weapons of red men. In what zone do most of both black and red races live? How do Indians compare in number with Negroes? What other name is given to Indian race?

Topics: — Features of Indians; savages of Amazon valley; ancient Indian tribes of Andes and Mexico; parts of North America containing Indians; present Indians of Mexico; reservations; early settlers and Indians; houses of Indians; weapons; zone of red and of black people; number of Indians.

26. The Brown or Malay Race

The people of the *brown* or *Malay race* also live almost wholly in the torrid zone. Their home is mainly on the islands of the East Indies, southeast of Asia, but it also includes countless small islands that extend for thousands of miles eastward into the Pacific ocean.

One large group of islands, called the *Philippines*, lying southeast of Asia, belongs to the United States. Several million people of the brown race live in these islands.

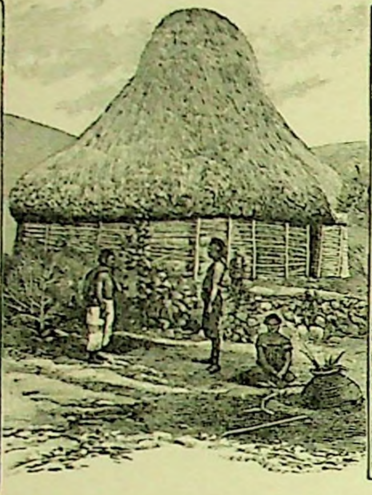


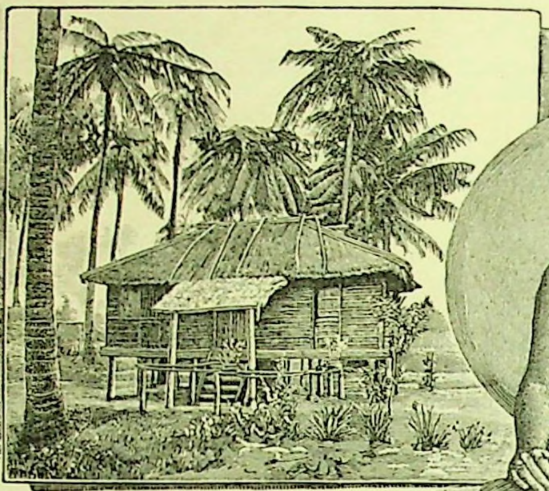
Map of the races

The people of the brown race have coarse black hair, flat faces and short skulls. Many of them have strong and well-built bodies. Their color is dark brown.

In some of the large islands southeast of Asia the brown people have towns and cities. In these islands much coffee and a very large portion of all the spices used in the world are raised. The towns and cities are mainly seaports, from which the coffee, spices and other products are sent abroad.

Brown men of the Fiji islands


Fiji hut


Malay hut in the East Indies

Many people of the Malay race are yet savages; others till the soil; still others are traders and sailors. Some are famous for the skill with which they can paddle canoes, even going far out on the ocean, from island to island, in these frail crafts.

Far out in the middle of the Pacific ocean there is a group of islands, called the *Hawaiian islands*, belonging to our country. Many white men have gone there to trade and to raise sugar cane, but the natives of the islands belong to the brown race. Many of them work in the fields of cane.

Native hut, Hawaii

Among the islands peopled by the brown race, besides those named above, are Java, Sumatra, Borneo, Celebes, Samoa and countless small Pacific islands.

There are about one fourth as many brown people as black people in the world.

The brown race is often called the *Malay race.* The name *Malay* comes from the Malay peninsula, the southeast peninsula of Asia. A small part of the brown race is still found on this arm of land.

Helps: — Where is the home of the brown race? Describe features of brown people. Name some products of islands southeast of Asia. Name some occupations of brown people. What does lesson tell about Hawaiian islands? How does number of brown people compare with number of black people? Why is the brown race also called Malay race?

Native girls, Hawaii

Topics: — Home of brown people; features of people of Malay race; occupations of brown people; products of islands southeast of Asia; Hawaiian islands; the name Malay.

27. The Yellow Race

The home of the yellow race is in Asia, and includes the lands of China and Japan east of the great central highland and the great plain stretching north to the Arctic ocean.

JAVANESE WOMAN

Tattooed chief New Zealand

The people of the yellow race have slanting eyes, coarse black hair, flat faces and short skulls. Except in the slant of the eyes they look very much like the people of the brown race.

It is thought by many persons that both the Malays and the Indians belong to the yellow race, but roamed away ages ago from the original home in Asia; the one race in some way reaching America, the other going off to the islands southeast of Asia. But at the present time they differ enough to treat them as three races.

Several hundred years ago the Chinese invented printing and gunpowder, but for many years that part of the yellow race has made little progress. One fifth of all the people in the world live in China, yet that country has only a few thousand miles of railroad. The Chinese know little about machinery for weaving cloth or for making iron and steel goods. They have not yet learned the value of coal as a fuel, though there are coal beds in their country.

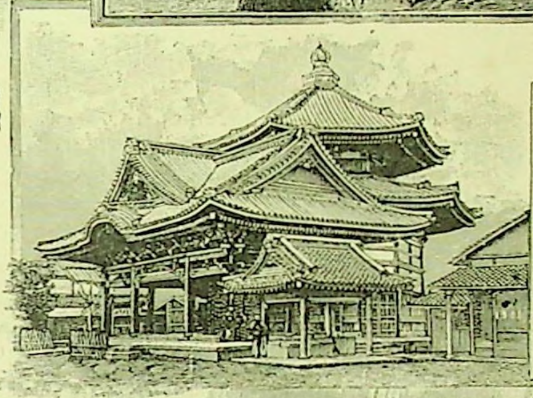
Some of the largest cities in the world are in China. The Chinese belong to a very old nation. They could spin and weave fine silks long before the people of Europe knew how, and they have long known how to make paper and beautiful porcelain dishes, such as cups, saucers and plates. The Chinese also raise immense quantities of tea.

The people of the yellow race living on the islands of Japan have made more progress than

Eskimo

Japanese

any other branch of the race. They are eager to learn how the white men do all kinds of work, and they have been wise enough to adopt many of the customs of the white race.



Japanese temple

River scene, Japan

The Japanese are a brave and active people. They have fine ships of war, as well as ships for trading. Like the Chinese they are famous for the weaving of silk and the making of porcelain. The people of both these lands are very skillful in carving ivory.

Japanese rain coats

Many tribes of yellow people live on the plains of Siberia. The small tribes are scattered along nearly the whole Arctic shore of the Old World, — both in Asia and in Europe.

The people in some of these tribes in the cold lands live by fishing in the lakes and rivers. Others hunt in forests that lie far inland from the cold shores. Still others keep herds of reindeer, and these useful animals supply the people with skins for clothing, and milk and meat for food. The swift deer also drag the natives on sleds over the frozen surface.

Many white people from Europe have also moved to the wide plain in northern Asia, and there are now more white people than yellow people in that land; but most of the tribes of yellow people live farther north, nearer the Arctic shore.

Small tribes of yellow people, called *Eskimos*, live along the Arctic shores of America. There the summer is too short to ripen grain. Seals, deer, bears, fish and sea birds supply food, clothing, heat and light.

Most of the Eskimos live in rounded huts made of stones, skins or driftwood. They make clothing out of the skins of seals and bears and the feathers of sea fowl. Hunting parties often build huts out of blocks of snow. In winter all the huts are buried in snow.

Woman of Burma

Chinese

The Eskimos look very much like the yellow people in the tribes that live near the Arctic shores of the Old World.

The yellow race includes more than one third of the people on the earth. There are four times as many people in the yellow race as in the black race.

One part of China is called ***Mongolia***, and the whole race is sometimes called the *Mongolian race*.

The pictures show an Eskimo of Greenland; a family of *Lapps*, living near the Arctic coast of Europe; two young ladies of Japan, playing native musical instruments; a "jinrikisha," or handcart; a pleasure boat; a temple; the peculiar hats and rain coats of Japan; a yellow woman of Burma, now part of eastern India; a native of China.

Helps: — Where is home of yellow race? Where is China? Japan? Describe features of yellow race. What is said in this lesson about Indians and Malays? Name two inventions of Chinese. What is said of progress of Chinese? Of their cities? For what class of work are they famous?

What is said of Japanese? Where else are yellow people found? How do yellow people of far north get food and clothing? What races mingle on great plain of northern Asia? Where are the Eskimos found? Where do they get food and clothing? Describe their huts.

What is said of size of yellow race? How does it compare with the Negro race in size? How many people live in China? Why are yellow people called Mongolians?

Topics: — Home of yellow race; China; Japan; Malays and Indians; inventions of Chinese; state of progress of Chinese; Japanese; both famous for what kinds of work; cold plains of northern China; food and clothing of people on cold plains; Eskimos; their food and homes; size of yellow race; compare black race; Mongolian.

28. The White Race

The home of the white race in the Old World lies between the lands of the black and the yellow people. It includes the part of Africa north of the great desert; all Europe, except where small tribes of yellow people have gone in from Asia; and all the great lands of Asia west and south of the central highland. Most of the people of Australia belong to the white race; many people of this race live in the southern part of Africa.

In the New World the white race has settled almost everywhere, except in parts of the dense forests of the Amazon valley and the cold lands near the Arctic shore.[1]

It is thought that ages ago there lived somewhere in central Asia a race of white people, now known as *Aryans*.[2] As the race increased in size large bands roamed about in search of new homes, where they could find pastures for their cattle. Many of the people went into India, where their descendants are still found. Other bands drove their herds westward and settled in grassy valleys as far as the border of Europe. Finally tribe after tribe moved into the peninsulas of southern Europe, and these tribes have grown to be nations. Many other tribes moved into the other parts of Europe, and they too have grown to be great nations. From Europe the white people have spread to America, Australia and southern Africa.

Scotch piper

People of the lowlands of western Europe

Women that live near the Rhine

Another branch of the white race, though not the Aryan, has settled in southwest Asia and in the lands of Africa north of the Sahara, and also in the fertile places in the desert itself. These people are darker than the Aryans, but belong to the white race. They are called *Semites*.

In later lessons we shall learn much more about countries which the Aryans and the Semites have settled. The Semites gave us our alphabet and our system of common figures.

The white race outnumbers even the great yellow race. These two races include about six sevenths of all the people of the earth. The former is now the leading race in the world, in commerce, in power, in art and in general intelligence.

Helps: — What part of Africa is settled by white people? Of Europe? Of Asia? Of Australia? Of America?

Who were the Aryans? What lands did they settle? What name is given to darker branch of white race? What lands have Semites settled? What have Semites taught to rest of white race? What does lesson tell about number of people in white race?

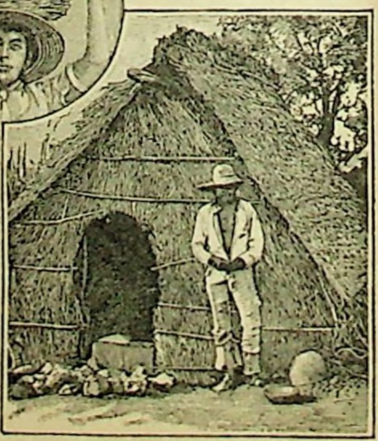
Topics: — Home of white race in Old World; in New World; Aryans; Semites; size of white race.

Soldier in the highland of central Asia

People of India (Parsees)

People of India (Hindus)

Girl of Ceylon


Mexican and hut

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[1] In Alaska and the portion of Canada adjoining, towns are springing up in mining districts.

[2] To some teachers it may seem as if it were not necessary to introduce the terms *Aryans* and *Semites*, but it will be seen later that they are very useful terms in grouping the governments and religions, which are quite distinct for the two branches of the white race. For example, it may be stated that in general the Semites have become Mohammedans and have founded absolute monarchies.

29. Religions

People that worship idols, or objects such as the sun, fire, animals or images, are called *pagans*. As a rule, they believe that there are spirits having magical power to do good or evil.

Woman of Jerusalem

Man of Egypt

Woman of Egypt

Nearly all savages are pagans. Most of them belong to the red race in the interior of South America; the black race in middle Africa; the black race in Australia and the great island of New Guinea on the north; the brown savages in parts of the islands southeast of Asia and in the islands far out in the Pacific; many of the tribes of yellow people along the Arctic coast. It will thus be seen that the pagans are the savages living mostly in the torrid zone, but in part in the frozen lands of the far north. About one seventh of all the people in the world are *pagans*.

In the last lesson we learned that one branch of the Aryan people settled in the great peninsulas of southern Asia. Some of these went into the wedge-shaped peninsula of India, just south of the highest mountains of Asia. The rock temple shown in one of the pictures on the next page was built by the people of India.

The native people of India are called *Hindus*. A large part of them believe in a very old religion that divides the people into classes, called *castes*. The four principal castes are the priests, the soldiers and rulers, the merchants and the servants. Below these are the outcasts.

Brahma is one of the chief gods in this religion, and the believers are called *Brahmanists*. About one fifth of the people in the world live in India, and one half of them are Brahmanists.

Men of the southern border of the Sahara

Many years ago a prince of India outgrew the old religion and taught that the belief in castes should not form part of any religion. This prince did not believe in any of the gods. His name was *Buddha*, and his followers are called *Buddhists*.

The people of India did not long follow the teachings of Buddha, but his religion spread over central and eastern Asia. Most of the yellow race, or about one seventh of the people in the world, are now Buddhists.

One of the pictures on the next page shows a pagoda, or tower for religious purposes, built by the Chinese. Many Chinese are Buddhists.

The branch of the white race, known as *Semites*, that live in southwest Asia and northern Africa, has given to the world the three great religions whose followers worship one God. The Christians believe in one God and the Bible; the Jewish people believe in one God, but not in the part of the Bible called the *New Testament;* the Mohammedans believe in one God, but their sacred book is the *Koran*.

The Christians are mostly descendants of the Aryans who settled in Europe. The Christian lands include the greater part of America, Europe and Australia and also the many European settlements along nearly all of the coast lands of the world. About one fourth of the people of the earth live in Christian countries

Arab woman

An Arab

Two Christian churches are shown on the next page, — one a common form of wooden church with tall steeple; the other a beautiful church of stone.

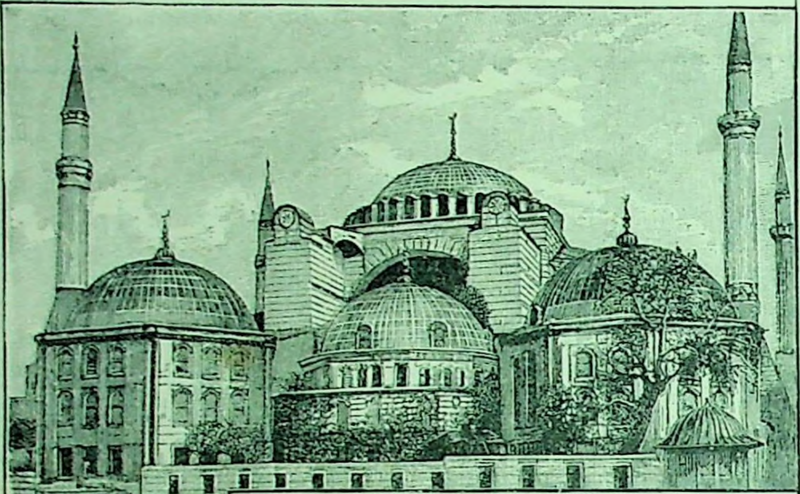
Woman of northern Africa

Mohammed, the founder of the religion that bears his name, lived in the peninsula of Arabia, in southwest Asia, about a thousand years before the first English people settled in America.

The Mohammedan religion has spread over nearly all southwest Asia, a large part of India, the largest of the islands settled by the brown people, and also westward into northern Africa and among the most intelligent Negro tribes along the south side of the desert of Sahara. This religion includes about one seventh of the human race, being about equal in number to the pagans.

The Mosque of St. Sophia, shown on this page, was built long ago for a Christian church, but many Mohammedans now live in the country in which it was built and use it for their own form of worship.[1]

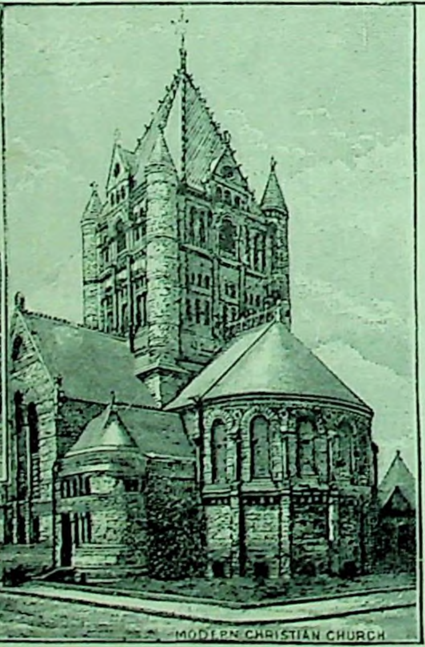
The Jewish people have been illtreated by people of other religions and have been widely scattered through most of the civilized countries of the world. Many of them are merchants, traders and bankers.



MOSQUE OF ST. SOPHIA

PAGODA

OLD NORTH CHURCH BOSTON

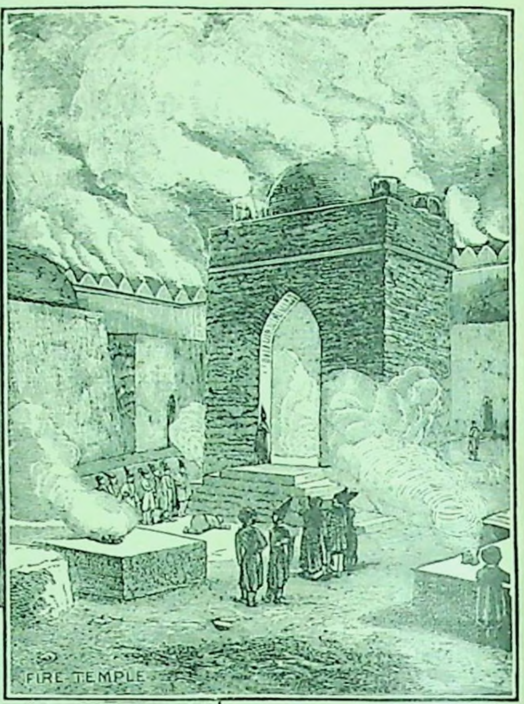


MODERN CHRISTIAN CHURCH

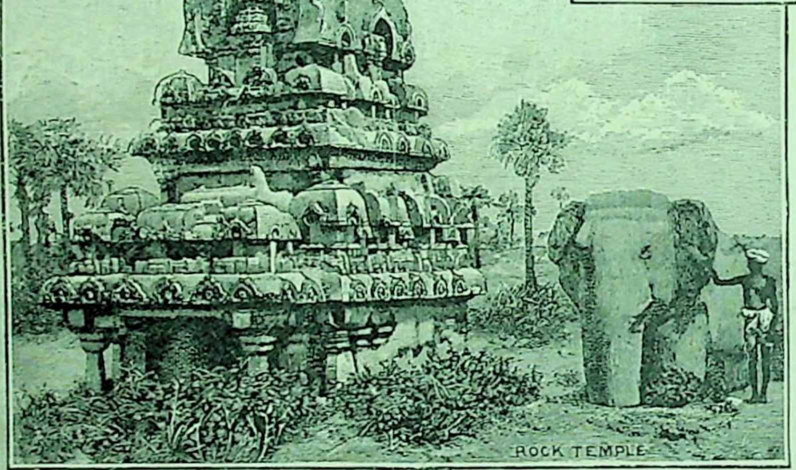
Helps: — What are pagans? Where are most pagans found? How many pagans are there in the world?

Who are Hindus? What are castes? Who are Brahmanists? How many Brahmanists are there in world?

Who are Buddhists? What race are mainly Buddhists? How many Buddhists are there in world? What religions have Semites given to world? What do Christians believe? How does belief of Jewish people differ from that of Christians? From that of Mohammedans?



FIRE TEMPLE



ROCK TEMPLE

Where are Christian lands? How many Christians are there in world? Where are Mohammedans found? How many Mohammedans are there in world? What does the text say of Jewish people?

Topics: — Pagans; Brahmanists; Buddhists; Christians; Mohammedans; Jewish people

30. Governments

Most of the groups or tribes of savages have rulers known by various names meaning *chiefs*. A chief sometimes has absolute power over the lives and property of his subjects. But as the tribes become more civilized the people secure more rights.

The tribal form of government is common among *pagans*.

Where are most of the savages, or pagans, found? *See last lesson.* What is a nation? A country? *See lesson 24.*

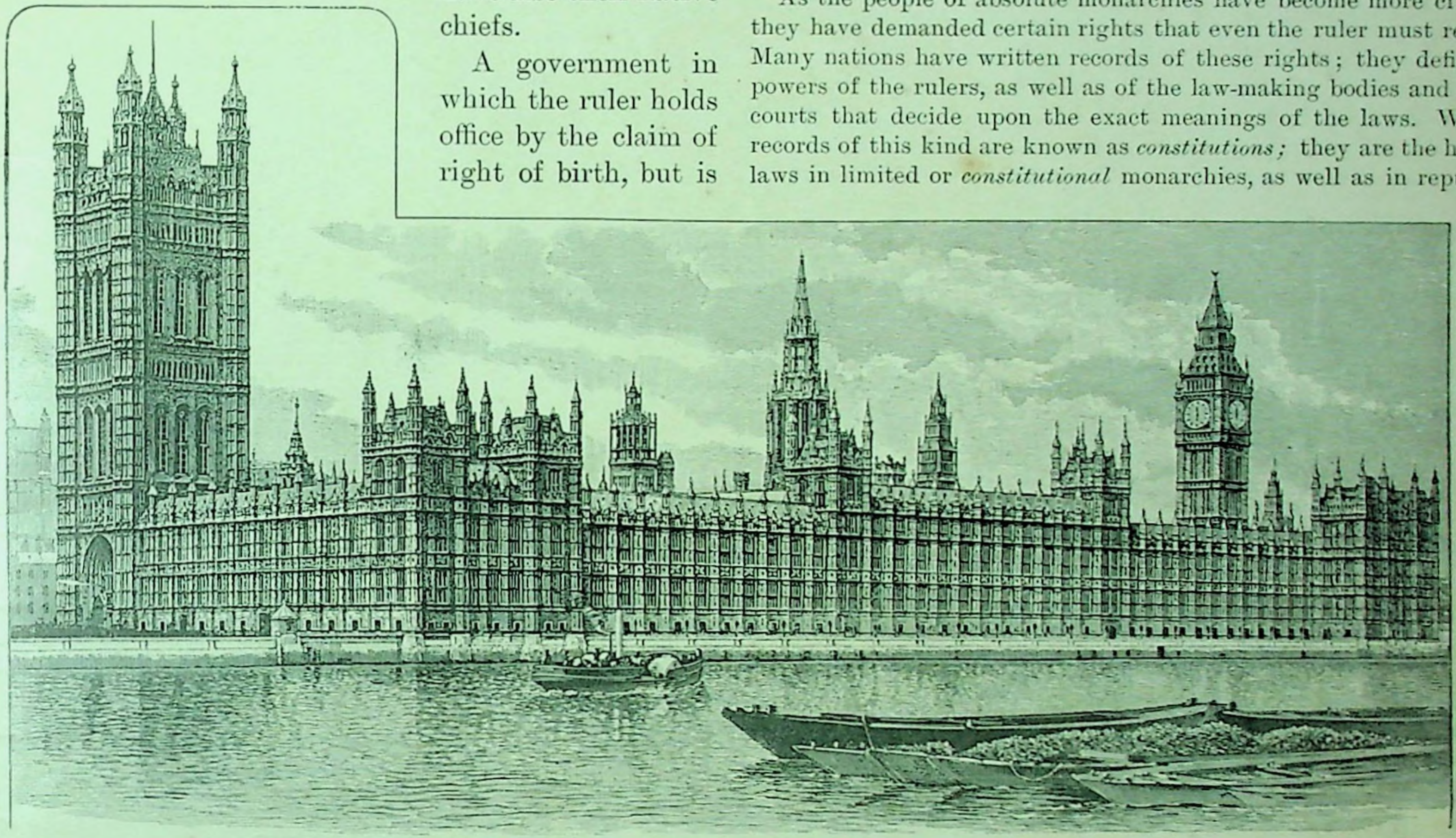
Formerly the rulers of some nations were as absolute in their power as chiefs. They made the laws and enforced them, and also held office for life, claiming it by right of birth. A nation thus ruled was called an *absolute monarchy*. There are no really absolute monarchies in the world to-day.

[1] The "Mosque of St. Sophia" is a Mohammedan place of worship in Constantinople. The "Fire Temple" is supplied with gas from the naphtha wells near Baku, a port on the west coast of the Caspian sea. This was a temple of the ancient fire-worshipers of Persia, who believed in gods of light and demons of dark. The "Rock Temple" is a fine specimen of the Hindu temples in India. "Pagodas" are common in southeast Asia. Paul Revere's signal lanterns were hung in the tower of the "Old North Church." The lowest picture in the group is the beautiful "Trinity Church," Boston.

The *independent*[1] countries of the *mainland* of Asia were formerly absolute monarchies. To-day China is a republic. In other Asiatic countries the people have some voice in their government. Korea is ruled by Japan. India and some other countries in the southern part of the continent are ruled by nations of Europe. Some of these countries have native rulers also.

Most of the countries of northern, central and southern Africa are to-day under the control of nations in Europe. Many of the tribes of black people who live in the interior have also their native chiefs.

A government in which the ruler holds office by the claim of right of birth, but is limited in power, is called a *limited monarchy* or a *constitutional monarchy*. Such a ruler is commonly called a *king*, a *queen*, an *emperor* or an *empress*.[2]



Principal government building of the British empire: Westminster Palace, on the Thames river, London[5]

A government in which the people freely choose their own ruler is a *republic*. The ruler is called a *president*.

The lands which were settled by the Aryan branch of the white race in Europe, North and South America, Australia and southern Africa have either the *limited monarchy* or the *republic*.

All the countries in America are republics, except Canada and some other smaller countries that are ruled by nations in Europe.[3]

Three countries of Europe have been republics for years.[4] These are France, Switzerland and Portugal. Since the World War more republics have been formed. The other nations of Europe are limited monarchies.

Nearly all the lands of the brown people are ruled by white nations.

The *masses* of laboring people in most absolute monarchies were ignorant and lived in a wretched condition of poverty. Gradually, through their seaports or other centers of trade, they are coming in contact with people of more advanced nations and are making more progress than in the distant inland regions.

As the people of absolute monarchies have become more civilized they have demanded certain rights that even the ruler must respect. Many nations have written records of these rights; they define the powers of the rulers, as well as of the law-making bodies and of the courts that decide upon the exact meanings of the laws. Written records of this kind are known as *constitutions;* they are the highest laws in limited or *constitutional* monarchies, as well as in republics.

Keeping in mind that there are exceptions, it may be said that *in general* middle Africa is the land of tribes; Asia is the newly awakened continent moving rapidly toward more liberal governments; the countries of Europe and America are limited monarchies and republics.

Helps: — What is the common form of government among tribes? What is meant by absolute monarchy? What are various monarchs called? Where were the absolute monarchies of the world?

What is a limited monarchy? What are some of the titles of rulers? What is a republic? What title is given to the ruler of a republic? What lands are limited monarchies or republics? What parts of America are republics? What forms of government have the nations of Europe? Name the republics in Europe. In general, what are the governments in various continents?

Topics: — Government of tribes; where pagan tribes are found; absolute monarchy; where absolute monarchies were found; limited monarchy; republic; where limited monarchies are found; where republics are found; America; general distribution of governments in continents; constitution.

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[1] To Teachers: — As a rule, the names of countries are not given in the text of this lesson, as it is the intention to teach at this time only the *general distribution*, both of governments and religions. The details will be taught under the separate countries. In some cases where examples or exceptions are referred to, they are cited as footnotes for the teacher.

[2] One of the countries peopled by the yellow race, namely, Japan, is a limited monarchy.

[3] Such as British Honduras and the Guianas.

[4] The little republics of Andorra and San Marino are scarcely more than small partly free cities.

[5] The Capitol, or principal government building of the United States, is shown on page 61.

ZONES OF PLANT LIFE

31. Where Plants Grow

Man cannot produce plants in every place where their seeds may be sown, but only where the soil, heat and moisture are suited to their growth.

Meadow grass thrives in rich moist soil, but thistles often spring up in sandy or rocky places. Clover seeks the warm sunshine, while ferns grow best in shady woods. Some mosses cling to the hard surfaces of rocks, but water lilies take root in the soft mud at the bottom of ponds. Many trees thrive in swamps, others on dry hillsides.

Seeds of swamp plants may be blown to dry sandy fields, but there they will die. If thistle seeds blow into swamps, they perish. Some kinds of rice must be sown in fields that can be flooded, but many cactus plants thrive in deserts.

Every kind of plant grows to suit its native haunts. By its roots, its stem, its leaves, its blossoms, it is fitted to get its food and ripen its seed.

The stem of the water lily grows long enough to reach from the mud to the surface of the water, where the seeds may ripen in the sun and air. Other stems bring the leaves of the same plant to the air, where they get much of their food.

Some grasses send their roots many feet into the ground in search of water, but the same grasses may put forth only short roots if the water is near the surface.

The seeds of the pine tree grow buried between the layers of the cones. These are often coated with pitch, to prevent the frost and rains from killing the seeds; but when the time comes for the seeds to grow into new plants the cones open and let them fall.

Plants have enemies, but they also have means of defending themselves against some of the enemies.

Thus, worms and bugs destroy potatoes, tomatoes and other vegetables; caterpillars often swarm in apple trees, eating the leaves and sometimes killing the trees. Birds destroy many seeds, using them for food, just as man does. In defense, the thorns on roses often prevent animals from breaking the stems or eating the branches. Some plants protect themselves by secreting poison juices; some by bitter sap; some by sending out to their surfaces silky gums.

In deserts, where plants are few, many kinds of cactus are covered with long spines, or thorns, and these prevent most animals from eating the plants.

Many plants, by means of their seeds or roots or stems, can spread over wide areas.

The light tufts of the thistle seed sometimes enable it to travel for miles in strong winds, and then fall in some place far from the parent plant.

Pine cones falling on hillsides may in time spread the seeds and cover the slopes with trees.

The branches of quick grass may creep for many feet through the soil, sending up green blades here and there.

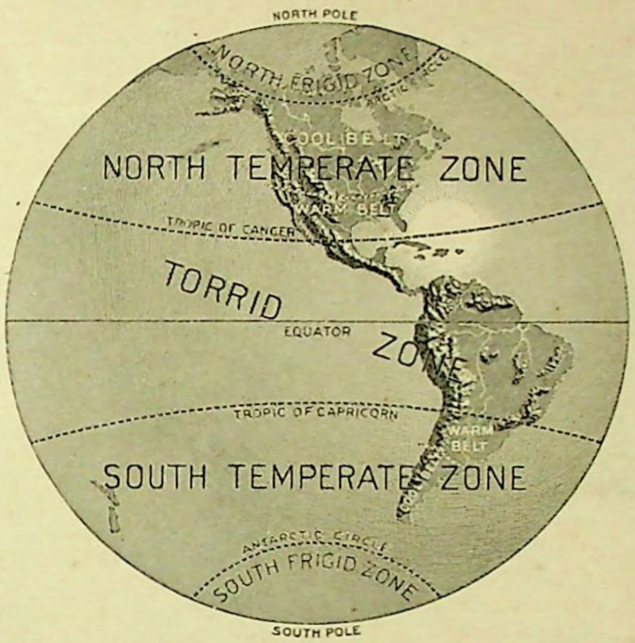
Little animals, like field mice and squirrels, often carry corn, nuts and grasses to their nests, thus scattering seeds for plants in new places.

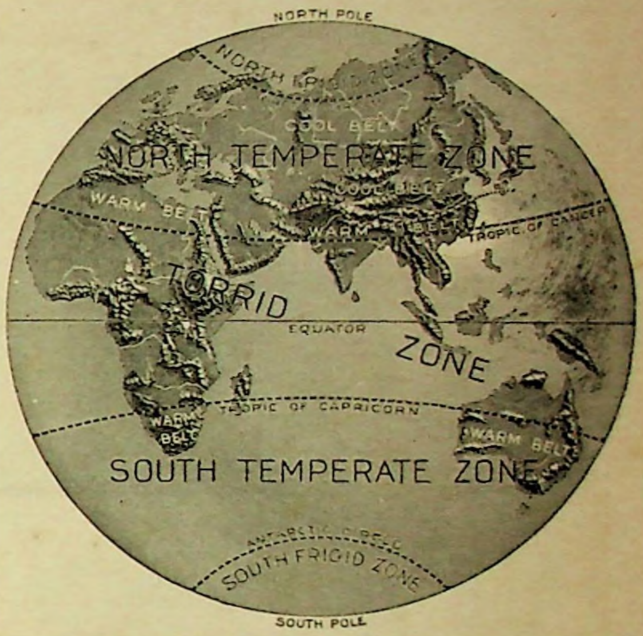
There are bounds in nature which plants cannot pass and live.

The seeds of water plants die if they fall on dry land, and the seeds of land plants die if they remain in water.

When the creeping branches of strong quick grass reach a pond or ledge, they must turn back or die. Meadow grasses cannot spread across hot sandy plains.

Plants that need strong sunshine may spread into colder and colder lands, but at last they reach a limit so cold that their seeds will not ripen even if the plants begin to grow. This is true of corn, which is easily killed by early frosts.





Tender plants of the lowlands cannot grow on high mountains; and there are many plants growing on high slopes that would die if taken into the valleys.

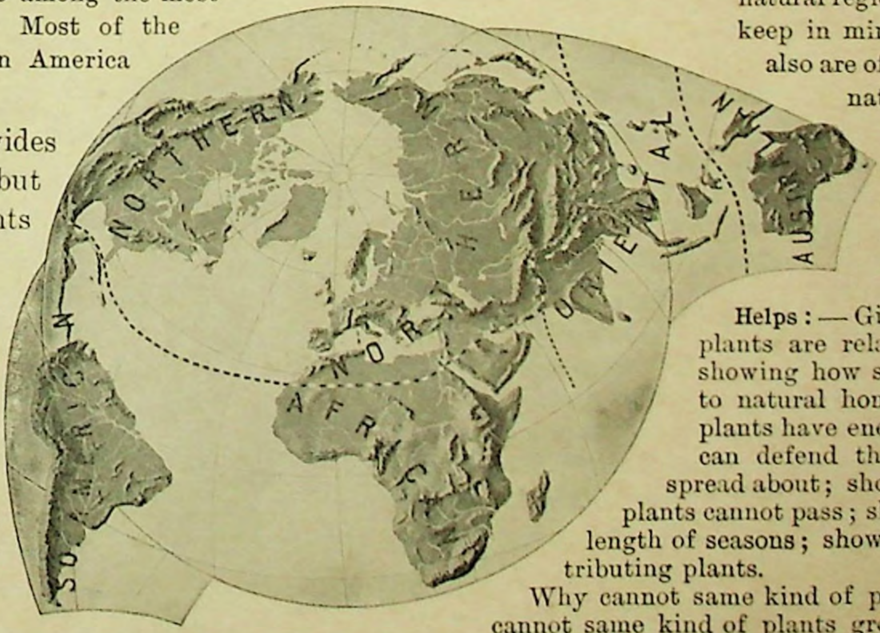
Some plants need a longer hot season than others, to ripen their seeds.

Orange blossoms often cover the trees in early spring, while the branches are still loaded with golden fruit from the last year's blossoms, showing that the trees need about the whole year to ripen the seeds in the fruit. But the apple tree blooms in the springtime, and its fruit ripens before winter.

Bananas require hot or warm weather all the year; but in the far north, where snow covers the ground except for a few weeks in summer, millions of poppies find time to spring up, blossom and ripen their seed.

A plant is not found in all places where the soil, heat and moisture are suited to its growth; but if the plant is not native to such a place, its seeds or the plant itself will thrive if taken there.

When white people first settled in America, they found here no wheat nor cotton. After a time the seeds were brought across the ocean, and now these plants are among the most valuable in the New World. Most of the grains and fruits that grow in America are native to the Old World.



Principal plant and animal regions

The sunshine not only divides the earth into belts of heat, but it enables only certain plants to grow in each belt.

Thus, many palms grow in the torrid zone. Cotton thrives in the warm belt. The cool belt is the home of the cone-bearing trees. The only trees of the frozen region of the far north are tiny dwarf willows.

But the same kind of plants cannot grow in all parts of a heat belt, because the lands there are not all alike. There are mountains and valleys, wet meadows and dry deserts, plains of clayey soil and others of sandy soil; but above all, there are broad seas and high mountains and wide deserts which act as barriers to the distribution of the seeds or of the plants themselves.

The plants and animals that are of greatest use to man have in many cases been carried to lands far from their native haunts. This is especially true of the most useful cultivated plants, such as wheat, corn, rice, cotton, coffee; man has carried the seeds across oceans, deserts and mountains and planted them in new regions, where they now thrive even better than in their original homes.

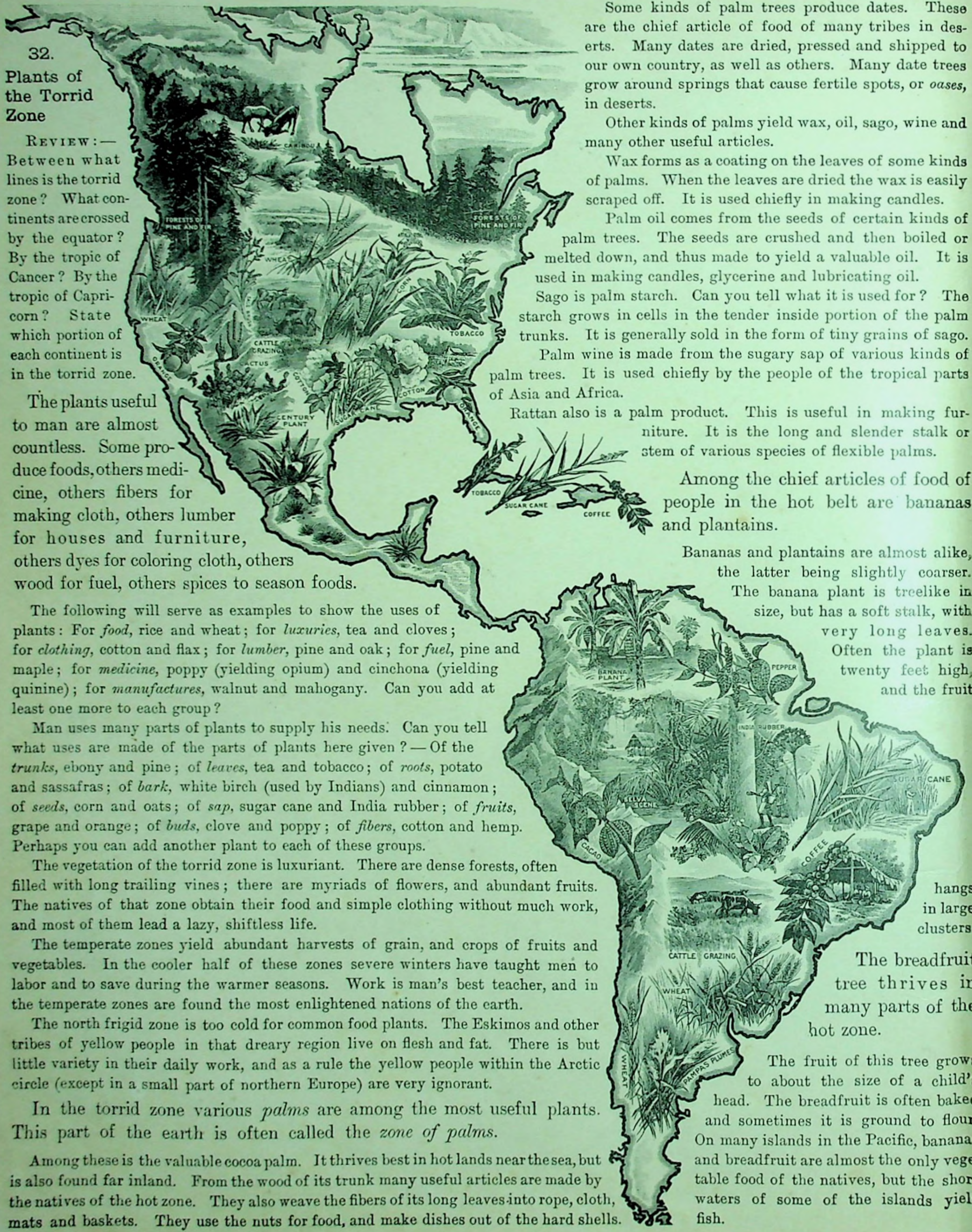
In this way the most useful plants have been distributed throughout the *heat belts*, but in such parts of these belts as are suited to the habits of the various plants. As regards plants, therefore, we may study them best from the standpoint of zones or heat belts.

Man has also helped greatly to change the homes of the domestic animals, such as cattle, horses, sheep, hogs, common fowl; but in the case of most kinds of large and interesting *wild* animals, man has done little to distribute them over the earth. For this reason, the *wild* animals can best be studied in groups according to their natural regions of growth. It is well also to keep in mind the fact that the *wild* plants also are often studied in groups in the same natural regions. The lower map on this page shows the boundaries of these regions. Perhaps you can name the oceans, highlands and deserts that form these boundaries.

Helps: — Give some examples showing how plants are related to soil, moisture and heat; showing how stems, roots and seeds are fitted to natural home of the plants; showing that plants have enemies; showing how some plants can defend themselves; showing how plants spread about; showing that there are bounds that plants cannot pass; showing that plants need different length of seasons; showing how man has helped in distributing plants.

Why cannot same kind of plants grow in all zones? Why cannot same kind of plants grow in all parts of a heat belt? Name some of plant barriers.

Topics: — Where plants thrive; how fitted to get food and ripen seed; enemies of plants; means of defense; how plants spread about; bounds which plants cannot pass; plants and length of season; man's part in distributing plants; plants of the zones; great barriers within heat belts.



32.

Plants of the Torrid Zone

Review: — Between what lines is the torrid zone? What continents are crossed by the equator? By the tropic of Cancer? By the tropic of Capricorn? State which portion of each continent is in the torrid zone.

The plants useful to man are almost countless. Some produce foods, others medicine, others fibers for making cloth, others lumber for houses and furniture, others dyes for coloring cloth, others wood for fuel, others spices to season foods.

The following will serve as examples to show the uses of plants: For *food*, rice and wheat; for *luxuries*, tea and cloves; for *clothing*, cotton and flax; for *lumber*, pine and oak; for *fuel*, pine and maple; for *medicine*, poppy (yielding opium) and cinchona (yielding quinine); for *manufactures*, walnut and mahogany. Can you add at least one more to each group?

Man uses many parts of plants to supply his needs. Can you tell what uses are made of the parts of plants here given? — Of the *trunks*, ebony and pine; of *leaves*, tea and tobacco; of *roots*, potato and sassafras; of *bark*, white birch (used by Indians) and cinnamon; of *seeds*, corn and oats; of *sap*, sugar cane and India rubber; of *fruits*, grape and orange; of *buds*, clove and poppy; of *fibers*, cotton and hemp. Perhaps you can add another plant to each of these groups.

The vegetation of the torrid zone is luxuriant. There are dense forests, often filled with long trailing vines; there are myriads of flowers, and abundant fruits. The natives of that zone obtain their food and simple clothing without much work, and most of them lead a lazy, shiftless life.

The temperate zones yield abundant harvests of grain, and crops of fruits and vegetables. In the cooler half of these zones severe winters have taught men to labor and to save during the warmer seasons. Work is man's best teacher, and in the temperate zones are found the most enlightened nations of the earth.

The north frigid zone is too cold for common food plants. The Eskimos and other tribes of yellow people in that dreary region live on flesh and fat. There is but little variety in their daily work, and as a rule the yellow people within the Arctic circle (except in a small part of northern Europe) are very ignorant.

In the torrid zone various *palms* are among the most useful plants. This part of the earth is often called the *zone of palms*.

Among these is the valuable cocoa palm. It thrives best in hot lands near the sea, but is also found far inland. From the wood of its trunk many useful articles are made by the natives of the hot zone. They also weave the fibers of its long leaves into rope, cloth, mats and baskets. They use the nuts for food, and make dishes out of the hard shells.

Some kinds of palm trees produce dates. These are the chief article of food of many tribes in deserts. Many dates are dried, pressed and shipped to our own country, as well as others. Many date trees grow around springs that cause fertile spots, or *oases*, in deserts.

Other kinds of palms yield wax, oil, sago, wine and many other useful articles.

Wax forms as a coating on the leaves of some kinds of palms. When the leaves are dried the wax is easily scraped off. It is used chiefly in making candles.

Palm oil comes from the seeds of certain kinds of palm trees. The seeds are crushed and then boiled or melted down, and thus made to yield a valuable oil. It is used in making candles, glycerine and lubricating oil.

Sago is palm starch. Can you tell what it is used for? The starch grows in cells in the tender inside portion of the palm trunks. It is generally sold in the form of tiny grains of sago.

Palm wine is made from the sugary sap of various kinds of palm trees. It is used chiefly by the people of the tropical parts of Asia and Africa.

Rattan also is a palm product. This is useful in making furniture. It is the long and slender stalk or stem of various species of flexible palms.

Among the chief articles of food of people in the hot belt are bananas and plantains.

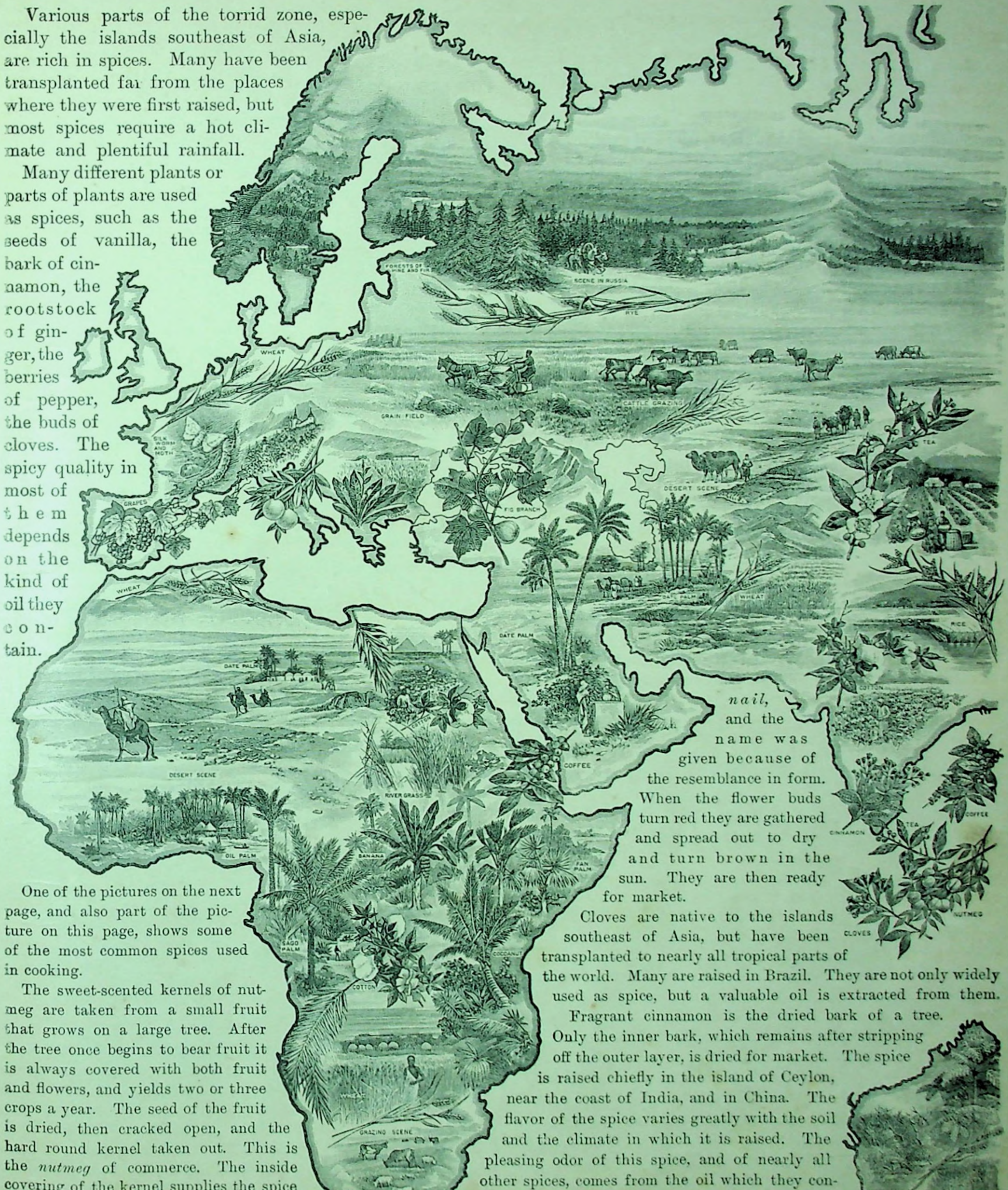
Bananas and plantains are almost alike, the latter being slightly coarser. The banana plant is treelike in size, but has a soft stalk, with very long leaves. Often the plant is twenty feet high, and the fruit hangs in large clusters.

The breadfruit tree thrives in many parts of the hot zone.

The fruit of this tree grows to about the size of a child's head. The breadfruit is often baked and sometimes it is ground to flour. On many islands in the Pacific, bananas and breadfruit are almost the only vegetable food of the natives, but the shore waters of some of the islands yield fish.

Various parts of the torrid zone, especially the islands southeast of Asia, are rich in spices. Many have been transplanted far from the places where they were first raised, but most spices require a hot climate and plentiful rainfall.

Many different plants or parts of plants are used as spices, such as the seeds of vanilla, the bark of cinnamon, the rootstock of ginger, the berries of pepper, the buds of cloves. The spicy quality in most of them depends on the kind of oil they contain.



One of the pictures on the next page, and also part of the picture on this page, shows some of the most common spices used in cooking.

The sweet-scented kernels of nutmeg are taken from a small fruit that grows on a large tree. After the tree once begins to bear fruit it is always covered with both fruit and flowers, and yields two or three crops a year. The seed of the fruit is dried, then cracked open, and the hard round kernel taken out. This is the *nutmeg* of commerce. The inside covering of the kernel supplies the spice called *mace*.

Another tree yields the biting flower buds of the clove. The word *clove* means *nail*, and the name was given because of the resemblance in form. When the flower buds turn red they are gathered and spread out to dry and turn brown in the sun. They are then ready for market.

Cloves are native to the islands southeast of Asia, but have been transplanted to nearly all tropical parts of the world. Many are raised in Brazil. They are not only widely used as spice, but a valuable oil is extracted from them.

Fragrant cinnamon is the dried bark of a tree. Only the inner bark, which remains after stripping off the outer layer, is dried for market. The spice is raised chiefly in the island of Ceylon, near the coast of India, and in China. The flavor of the spice varies greatly with the soil and the climate in which it is raised. The pleasing odor of this spice, and of nearly all other spices, comes from the oil which they contain. The fruit of the vanilla plant, from which the well-known flavoring extract is made, grows in the form of long pods containing many small black seeds.

Ginger is made from the rootstock of plants growing in the hot belt. Sometimes the dried rootstock is ground to powder and sold in this form.

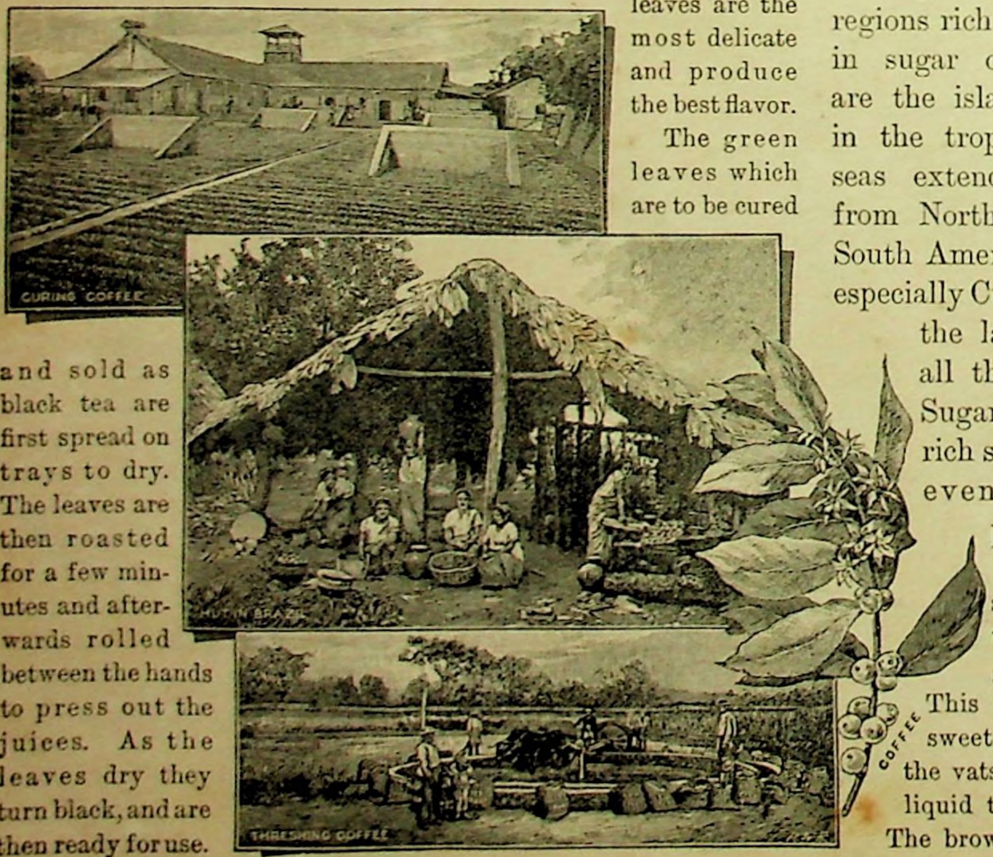
The stinging powder called *pepper* is made from berries that grow in long clusters on climbing shrubs or vines.

The torrid zone supplies the world with coffee. Most of the coffee used in our country grows in the eastern part of South America, near the tropic of Capricorn; but a large part of the coffee used in all countries is raised in the great peninsulas of southern Asia and the East Indies, southeast of Asia. The coffee plant thrives best in warm weather, with plenty of rainfall.

The plant produces berries that look like cherries. The berries are picked when they turn dark red and begin to shrivel. Each berry has two seeds, and these are taken out by machines. The seeds of the coffee berries are sent to market, but before being used to flavor drinks they are roasted and ground.

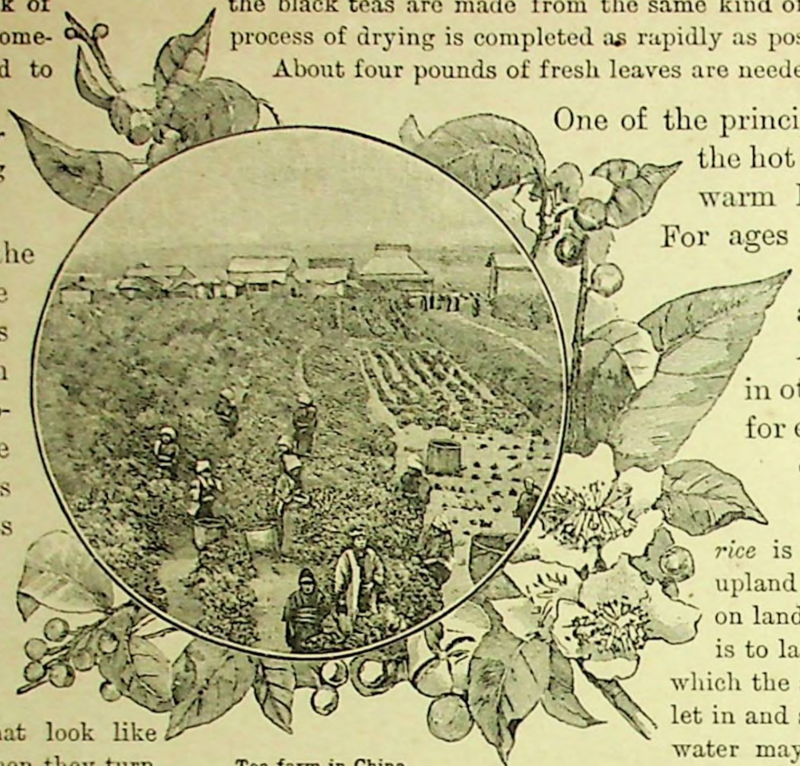
Tea is another plant used to flavor drink. This useful plant grows best in a hot, moist and even climate, like that of southeast China, India and the islands southeast of Asia.

Several times a year crops of tea leaves are picked for curing. Care is taken to nip off the leaves without injuring the buds which grow where the leaves join the branches. The youngest and earliest leaves are the most delicate and produce the best flavor. The green leaves which are to be cured and sold as black tea are first spread on trays to dry. The leaves are then roasted for a few minutes and afterwards rolled between the hands to press out the juices. As the leaves dry they turn black, and are then ready for use. The green and the black teas are made from the same kind of leaves, but for the green tea the process of drying is completed as rapidly as possible after picking.



Scenes in Brazil

About four pounds of fresh leaves are needed to make each pound of tea.



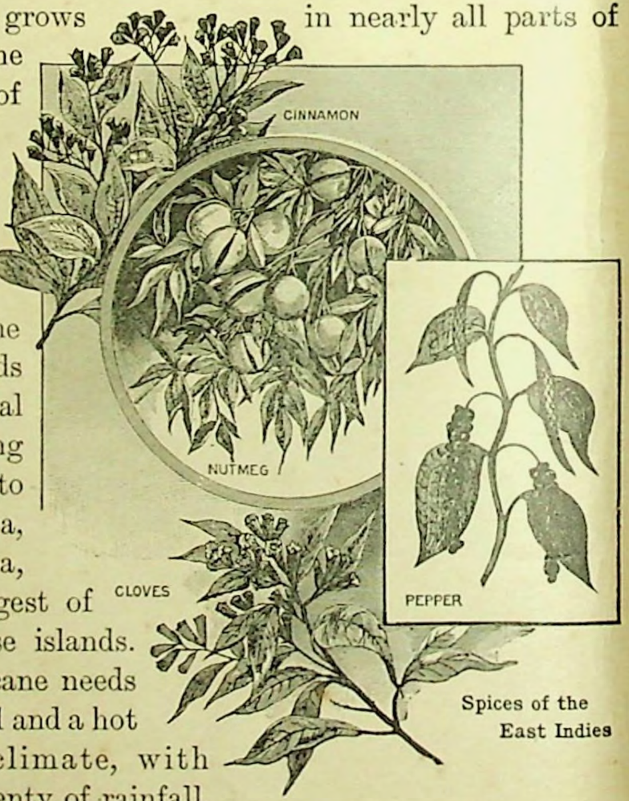
Tea farm in China

One of the principal foods of people living in the hot belt and in some parts of the warm lands farther north is rice. For ages it has been a leading food crop in China, Japan, India and the islands southeast of Asia. Smaller crops are raised in other warm parts of the earth, for example, in the southern part of our own country.

The pretty white grain called *rice* is raised both in lowland and in upland regions, but the best rice grows on lands that can be flooded. One plan is to lay out the field in little furrows in which the seed is sown. The water is then let in and stands till the seed sprouts. The water may then be drained off, but when joints form on the stalks the fields are again flooded, and the grain ripens standing in water, as shown in the smallest picture on the opposite page.

When the rice is ripe it is cut and the grain is threshed from it. This is one of the most useful plants that grow on the earth.

Sugar cane grows in nearly all parts of the torrid zone and in some of the warmer parts of the temperate. Among the regions rich in sugar cane are the islands in the tropical seas extending from North to South America, especially Cuba, the largest of all these islands. Sugar cane needs rich soil and a hot even climate, with plenty of rainfall.



Spices of the East Indies

One of the pictures on the opposite page shows how sugar cane appears growing in the soil. When cut the cane is taken to mills, where the stalks are ground between iron rollers to extract the juice. This is boiled several times to make it thicker and thus sweeter, and at last the sugar forms as brown crystals in the vats. This is the brown sugar of commerce. The dark liquid taken from the vats is molasses.

The brown sugar may be purified, or refined, in various ways, but the principle of the process is to dissolve it in water and let it slowly filter through layers of bone charcoal or other porous substance, which takes out the impurities. The liquid is then boiled till it thickens and the whiter sugar again forms as crystals, leaving a part still as liquid syrup. In some countries the same plants will grow for several years, being cut once a year.

Among the other important plants growing in the torrid zone, and also in the warmer parts of the temperate zone, are cotton and tobacco.

Another product very useful to the natives of the hot and warm belts, especially of the Old World, is bamboo.

This is a coarse grasslike plant, often growing to the height of from fifty to seventy feet. The tender shoots of young plants may be used for food. The softer parts of some stalks are beaten into pulp and are used in making paper. Strips of bamboo are made into baskets, chairs, beds and very many other articles. Even houses or huts are in part made of the strong jointed stems.

Bamboo

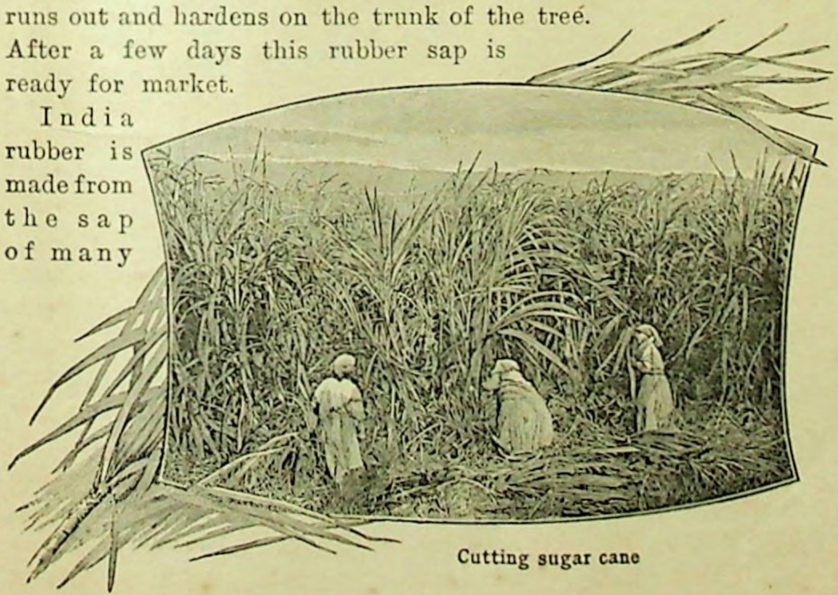
Many of the trees of the torrid zone are very useful. Some yield valuable lumber; others, beautiful dyes; others, gums used for various purposes, such as making varnishes; still others, fine cabinet woods, or woods used for making furniture. Many yield fruits and spices.

Among the curious trees of the hot belt is the banyan. Its branches send down shoots that take root in the ground. These shoots also branch, and the new branches send down other shoots. A single tree may thus grow to form a grove covering several acres.

One of the most useful gum trees is the India rubber tree. There are various species of this tree. Many are found on the hot and damp banks of the Amazon river. To get the sap from some trees, deep cuts are made in the bark, and cups are placed beneath them to catch the milky sap that oozes out. When heated in certain kinds of smoke, this juice dries, thickens and forms rubber of a fine quality.

From another kind of tree the outer layer of bark is stripped off to the height of about five feet from the ground. The sap then runs out and hardens on the trunk of the tree. After a few days this rubber sap is ready for market.

India rubber is made from the sap of many kinds of trees and shrubs that grow in nearly all hot and damp parts of the earth. Name some of the uses of rubber.


Cutting sugar cane

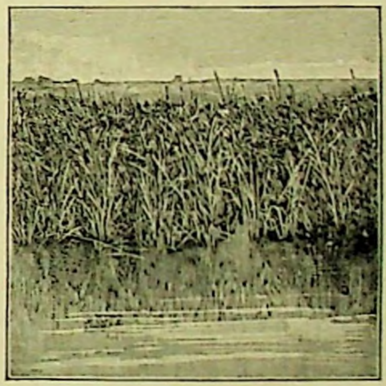
Among the many species of trees yielding dyes may be named *logwood.* Thin chips are cut from the trees and are kept moist. Green crystals form on the chips, and these crystals are used in dyeing cloth.

Dyes of various kinds are made from logwood. Some of these are used to give the color in blue woolen cloth, purple calico and black prints.

Banyan tree

The vegetation of the torrid zone far surpasses in variety and density that of any other part of the earth. In places the trees grow in dense masses, with long vines weaving networks among the branches. In many parts of the lowlands the thick foliage shuts out the drying sunshine. The rainfall being heavy, these lands become very wet and therefore unhealthful for white people.

Both in the forests and in the open fields of the torrid zone grow many plants of rich color and beautiful form, such as we sometimes see in hothouses.


Rice growing in water

Helps: — In what ways are plants useful to man? What parts of plants are used by man? Describe uses of some palms. What two plants supply food to many people in Pacific islands? Tell what you can about nutmegs; cloves; cinnamon; ginger; pepper. In what parts of the world is coffee raised? Describe the plant. Where is tea found? Tell how tea is cured. What is said of value of rice as food? Where is rice raised? Tell what you can about growing rice.

Where is sugar cane produced? Describe the plant and its products. Name some uses of bamboo. What is said of trees of torrid zone? Describe growth of banyan. Tell how the gum of India rubber trees is prepared. What is logwood and how is it used?

Topics: — Uses of plants; parts of plants used; palms; bananas; breadfruit; nutmegs; cloves; cinnamon; ginger; pepper; coffee; tea; rice; sugar cane; bamboo; trees of torrid zone; banyan; India rubber tree; logwood; general description of plant life of torrid zone.

33. Plants of the Warm Temperate Zones

Review: — What line runs along the south side of the northern warm belt? Which portion of the United States is in this belt? Which portion of Europe? Of Africa? Of Asia?

What part of South America is in the southern warm belt? Of Africa? Of Australia?

Many of the plants of the torrid zone thrive also in parts of the warm belts, especially rice, tea, sugar cane, bamboo and many fruits.

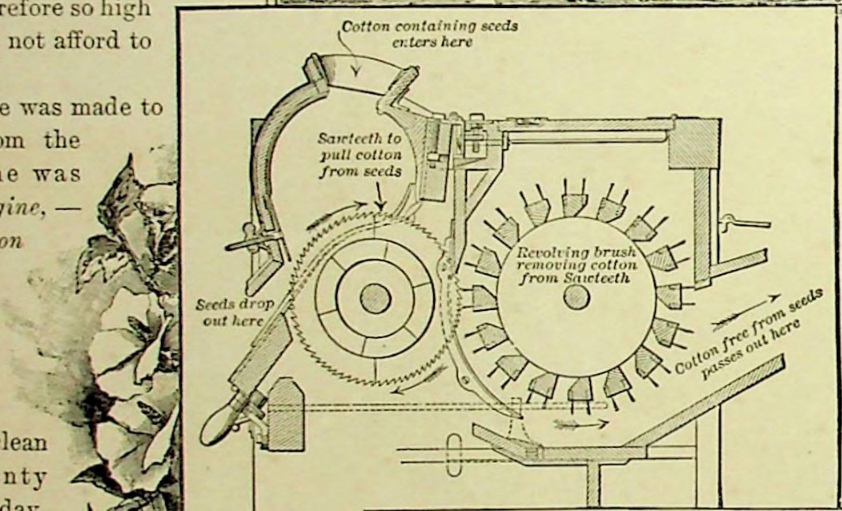
Cotton requires a very long warm season with plentiful rainfall to ripen its seeds and thus produce long fibers on them. This plant grows therefore in warm and hot lands. The northern warm belt is often called the *cotton belt* of the world. This plant also grows well in parts of the torrid zone, such as India. The most productive cotton regions are the warm plains in the southern part of our own country, the peninsula of India and the Nile valley in northeast Africa.

Picking cotton

The value of this plant is shown by the fact that about one half the people of the earth wear clothing made wholly of cotton; and nearly all the rest of the human race, except some savage tribes, use it in some part of their dress.

The best grade of cotton has long strong fibers and grows a little way inland from the southeast coast of our country.

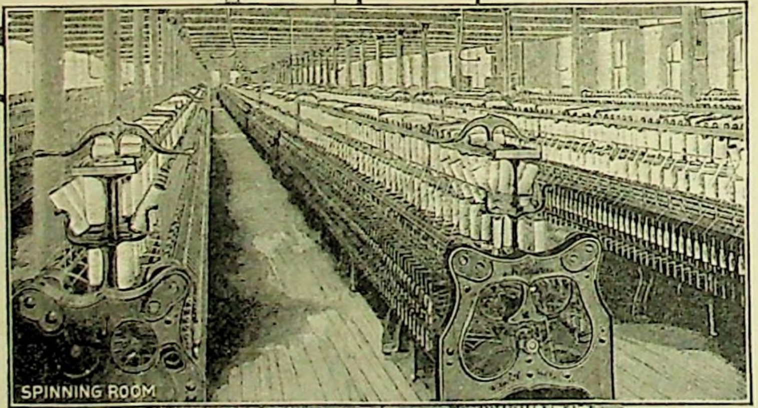
Until about a century ago cotton fiber was separated by hand from the seeds. This was very slow work, for a person could pick only about a pound of fiber in a day. The price of cotton was therefore so high that poor people could not afford to use much cotton cloth.

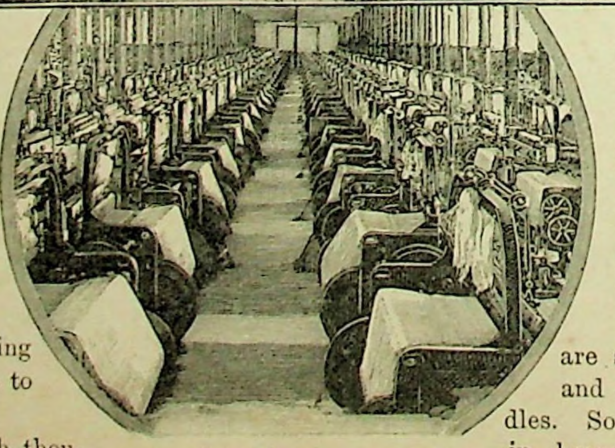

Cotton containing seeds enters here
Sawteeth to pull cotton from seeds
Revolving brush removing cotton from Sawteeth
Seeds drop out here
Cotton free from seeds passes out here
Cotton gin and cotton plant

At length a machine was made to separate the fiber from the seeds. This machine was called the *cotton engine,* — now shortened to *cotton gin*. It has fine saw-teeth that draw the fibers through slits too narrow to let the seeds pass. A large cotton gin can thus clean about fifteen or twenty bales of cotton in a day. A bale weighs, on an average, about 500 pounds. Of course cotton soon became much cheaper, and its use in clothing increased.

One of the pictures, in the form of a diagram, on this page shows how a cotton gin does its work. The cotton, as it comes from the field, is put into the opening at the top; it falls upon the saw-teeth of the turning wheels and is carried to the narrow slits. There the fiber is drawn from the seeds and is carried through the slits. Wheels having strong brushes clean the fiber from the saw-teeth and brush it along and out of the cotton gin. It is then carried to powerful presses and made into bales. It is now ready for market and is the *raw cotton* from which thread and cloth are made.

Before the cotton gin was invented machines had been made for spinning or twisting fibers into thread and for weaving the thread into cloth. There was a large and growing demand for raw cotton, and the cotton gin made it possible to supply this fiber without great expense.




Looms for weaving cloth

One of the pictures on this page shows a room in which thousands of spindles are twisting cotton fibers into thread and winding the thread up in the form of large spools. Before reaching this room the fibers have been combed, or *carded,* so as to unsnarl them and put them in order for twisting into thread.

The lower picture shows great looms at work weaving threads across one another, so as to make cloth.

When the fibers are drawn away through the slits the seeds roll back and fall out of the machine through an opening marked in the diagram. They are then carried to a strong press which squeezes the oil out of them. This is known as *cotton-seed oil.* It is used in making soap and other articles. Much of the oil is refined. Some of it is mixed with the oil of the olive, but the real olive oil is made from the olive fruit.

The *oil cake* which remains after the oil is pressed from cotton seeds is used to fatten many thousand cattle every year. With all these uses it is clear that cotton is one of the most useful plants cultivated by man.

Tobacco plants thrive both in the torrid and the temperate zones. More tobacco is raised in the United States than in any other country, but the best grade of tobacco comes from Cuba. Europe, southern Asia and the islands southeast of Asia produce large quantities.

Tobacco consists of the dried or *cured* leaves of several species of plants. Some of these grow to the height of six feet or more and bear large coarse leaves on their simple upright stalks.

When the leaves are old enough the tall stalks bearing the leaves are cut off close to the ground. In some places the plants are then hung on long rods in the fields to dry; in other places the drying takes place in the curing houses.

After a time the leaves are stripped from the stalks and are bound in small bundles. Sometimes these are placed in heaps on the floor to heat slowly till certain changes take place in the leaves. They are then ready to be made into cigars, snuff or other tobacco goods.

The warmer half of the temperate zone is rich in such fruits as oranges, lemons, figs, grapes, peaches and pineapples.

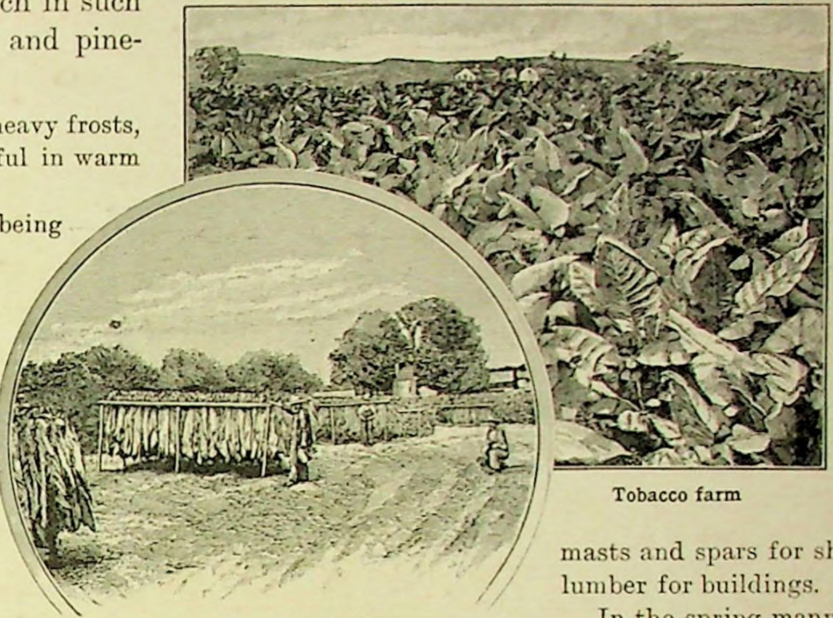
Most kinds of orange and lemon trees are killed by heavy frosts, and the culture of this fruit is therefore most successful in warm lands, in the warm and the hot belts of the earth.

Figs thrive in the same climate as oranges. Before being sent to market most figs are dried and pressed.

Grapes are widespread over the torrid and temperate zones. There are many varieties, some being marketed for eating fresh from the vines, some being sent to the presses to yield their juice for wines and others being spread in the strong sunshine to dry and become raisins. In some parts of southern Europe tiny grapes are dried and sold under the name of *dried currants.*

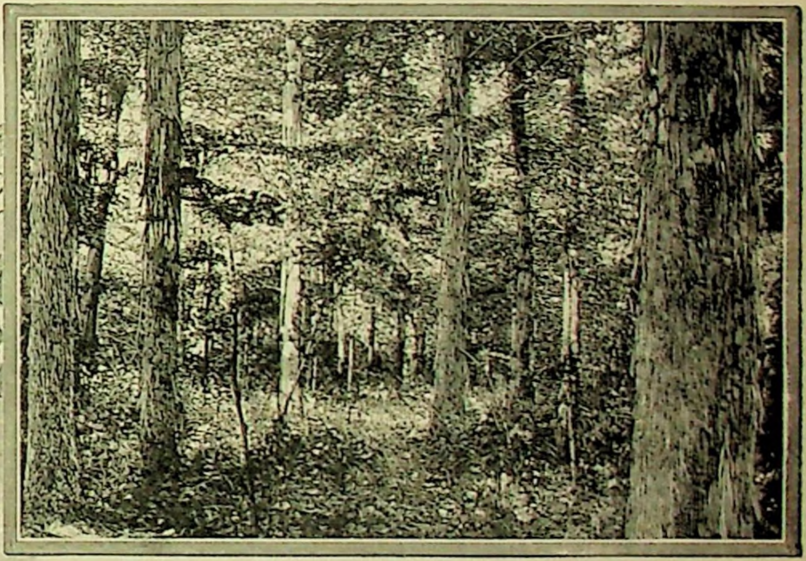
The pineapple takes its name from the fact that the fruit looks like a great cone from a pine tree.

The lowland regions in the warmer half of the temperate zone produce many kinds of useful grains, such as wheat, corn and rice.

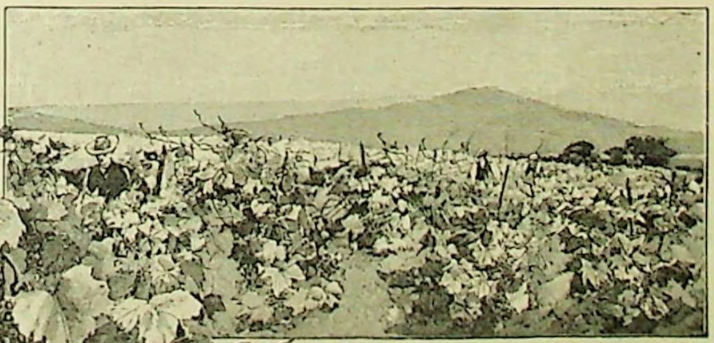

Tobacco farm

Curing tobacco in the field

Forest of hard or long-leaf pine on southern coastal plain of United States


Hickory (hard wood) forest near southern end of Appalachian highlands

Rice was described in the last lesson; wheat and corn will be considered more fully in the next lesson, as they thrive chiefly in the cooler half of the temperate zones, on both sides of the equator.


California vineyard

Valuable forests cover large parts of the warm belt of the north. Here are found such hard-wood trees as maple, oak, hickory and also the useful long-leaf or yellow pine. These forests yield large quantities of lumber.

The long-leaf pine sends up large straight trunks with wood made of very strong fibers. Such trunks make excellent masts and spars for ships, as well as lumber for buildings.

In the spring many of these trees are *hacked* or gashed and boxes are cut in the trunks. The sap which gathers in these boxes is called *raw turpentine.* This is put in large vats, or *stills,* and boiled; the vapor that rises and passes into another vessel, where it cools, is called *spirits of turpentine.* This is very useful in many ways, as in mixing paints.

The part that does not pass off as turpentine is known as *rosin.* It is poured into barrels, where it cools and hardens and is ready for market.

When the wood is burned slowly with little air, buried under turf, *tar* runs out and is collected in vats or barrels. When the tar is boiled till it thickens somewhat, it forms *pitch.*

Rosin is widely used in varnishes, soaps, paper and various oils. Rosin, tar, pitch and turpentine are called *naval stores* and are of great use in the process of building and rigging ships, as in making the decks and other parts of the hull water-tight, and in preserving the ropes from the action of rains, damp air and sea water.

The warmer half of each temperate zone lies between the trade winds of the torrid zone and the westerly winds of the cooler parts of the temperate zones. Some parts of the warm belts are in the path of moist winds from border seas, but other parts receive but little rainfall.

In many parts of the warm belts and in some parts of the cool belts there are wet seasons followed by months of drouth. In such regions the rains or melted snows of neighboring uplands or mountains are often gathered into reservoirs for use during the dry season. Canals or ditches from these reservoirs lead the water into groves, vineyards and vegetable gardens.

If it were not for this water supply, some of the most fertile and fruitful regions of the temperate zones would be very dry, at least in some seasons. The process of storing up water and then leading it in ditches over the land is called *irrigation*.

In some of the drier parts of the warm belts are found many species of *cactus*. Many of these plants have leafless stems with large thorns.

Helps: — Which part of each continent is in the warm belt of the north? Of south? Name some plants of torrid zone that thrive in warmer part of temperate zones.

Where are principal cotton lands? Explain cotton gin. What use is made of cotton fibers? Of cotton seed?

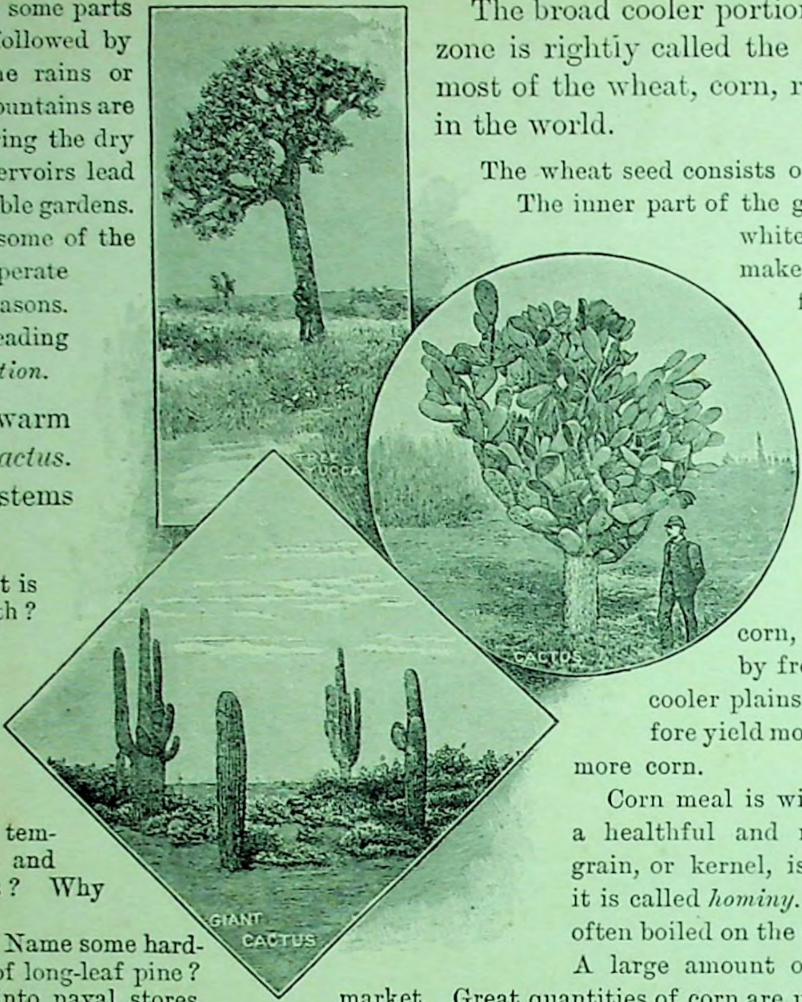
Where is tobacco raised? How is tobacco cured for market?

Name some fruits of warmer part of temperate zones. What is said of oranges and lemons? What uses are made of grapes? Why is pineapple so called?

Name some grains of temperate zones. Name some hard-wood trees of warm belt. What are uses of long-leaf pine? Describe process of changing its sap into naval stores.

Where does warmer part of each temperate zone lie with regard to winds? Explain irrigation. Where are species of cactus found?

Topics: — Locate warm belt of north; of south; some plants of both warm and hot belts; lands of cotton; cotton gin; uses of cotton fiber; of cotton seed; where tobacco thrives; curing tobacco; some fruits of warm belts; oranges and lemons; uses of grapes; grains of warm and cool belts; hard-wood trees; uses of yellow pine; naval stores; irrigation; cactus.



34. Plants of the Cool Temperate Zone

The cool belt of the south has so little land and so few useful products that we need hardly mention it. By the term *cool belt*, in this lesson, will therefore be meant the cool belt of the north.

What line separates this cool belt from the north frigid zone? How far south does the cool belt extend in North America? In Europe? In Asia?

Describe the seasons of the lands in cool belt of the north. *See lesson 21.* What winds blow chiefly in the cool belt? *See lesson 22.*

The broad cooler portion of the north temperate zone is rightly called the *grain belt*. It produces most of the wheat, corn, rye, oats and barley used in the world.

The wheat seed consists of a grain inside a thin husk. The inner part of the grain is used in making fine white flour, but the entire grain makes wholesome though darker flour.

There are several kinds of wheat. Some thrive in scanty soil; others, in deep rich soil. Some grow best in hot lands; others, in cooler climates. For these reasons, wheat is a wide-spread grain.

Wheat is hardier than corn, not being so easily injured by frost or by cool weather. The cooler plains of the temperate zone therefore yield more wheat; the warmer plains, more corn.

Corn meal is widely used in cooking, and is a healthful and nutritious food. When the grain, or kernel, is broken, hulled and boiled, it is called *hominy*. Green corn, or *sweet corn*, is often boiled on the cob and is thus used for food. A large amount of green corn is canned for market. Great quantities of corn are used to fatten hogs and cattle.

Rye, oats and barley are much hardier than corn, and often thrive in poorer soil and a colder climate; but they thrive also in the fertile and warmer plains far south.

Prairie cornfield

In some parts of the great Central plain of our country the grain-fields are so large that engines are used to plow the ground, cut the grain, bind and thresh it.

Many kinds of fine fruits grow in most parts of the cool belt. Among these are apples, pears, peaches, grapes, apricots and plums.

The cool belt, and also parts of the warm belts, produce many vegetables, such as potatoes, beans, peas, cabbages, onions and turnips. The various kinds of grains and vegetables, with meats, form the chief articles of food of the people in the temperate zones.

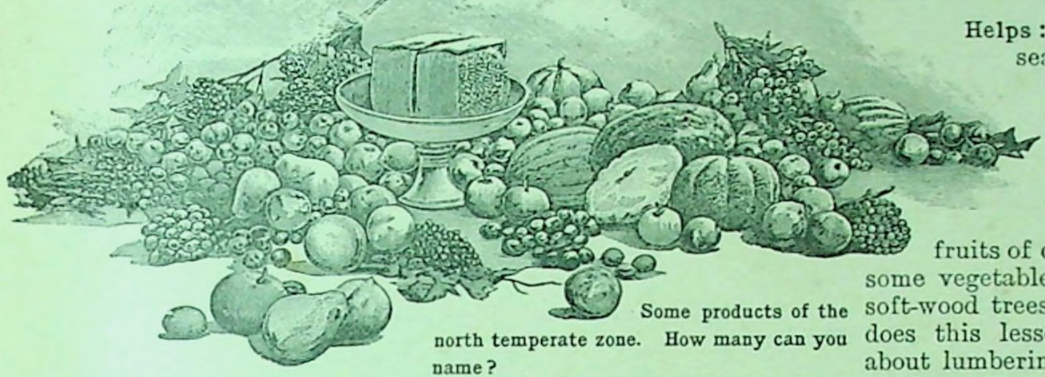
Tobacco is an important product of the cool belt, as well as of warmer regions of the earth.

Sheaves of wheat on the prairies

Threshing wheat on the prairies

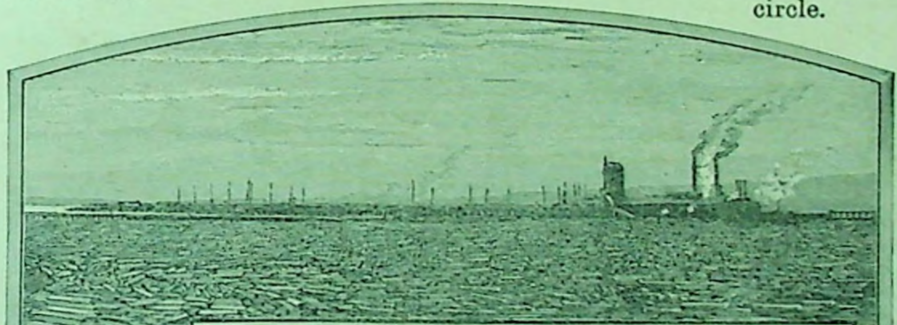
The cooler part of the north temperate zone is sometimes called the *pine forest belt,* but there are also many hard-wood trees.

The pine, fir, spruce, hemlock and other trees form a group of valuable soft-wood trees. Some of the trunks make tall, straight and strong masts for ships. Soft-wood lumber is used in making parts of furniture and buildings. Much of the wood of the spruce is ground to pulp, and this is used in making some kinds of paper.


Some products of the north temperate zone. How many can you name?

In the autumn bands of lumbermen go into the forests of the north, locate camps, lay out roads, clear the channels of streams and thus make ready for the work of getting out logs or timber. All through the winter trees are felled and then chopped or sawed into logs of proper length for handling. These are hauled to the banks of the streams and there piled up, often on the ice, to await the time of the spring thawing. Then when melting snow and rains swell the streams and they are free from ice, the logs are floated down to the mills and there sawed into lumber, such as boards, beams, planks and shingles.

One of the pictures shows a lumber camp in a snowy forest. The picture above it shows a river filled with logs; on the farther bank of the river is a sawmill at work sawing logs into lumber.


Logs in a river near a sawmill

Lumber camp in winter

One of the most useful products of the cool belt is *grass.* The best grass lands in the world are there, and the grass supports millions of cattle, sheep and horses.

Flax is the principal fiber plant of the cool belt. From the strong fine fibers of this little plant are made linen thread and various kinds of linen cloth and lace.

Linen cloth and thread are made from the silky fibers that form an inner bark round the stalk of the flax plant. Linseed oil is pressed from flaxseed. This oil is largely used in paints.

Hemp is a useful fiber plant of this zone. It is used in making rope.

The northern part of the temperate zone, near the Arctic circle, is very cold and dreary. There the seasons are too short to ripen grain. In most places the ground is frozen nearly all the year to a great depth and thaws only a few inches at the surface during the few weeks of summer. The trees dwindle away and almost disappear. Few people live in this part of the temperate zone.

Helps:—What lands are in cool belt of north? Describe seasons of cool belt; also winds.

What are principal grains of cool belt? What does text tell about wheat? About corn? About rye, oats and barley? Make a list of fruits of cool belt; some vegetables; some soft-wood trees. What does this lesson teach about lumbering in the northern pine forests?

Why is grass so useful? Name principal fiber plant of cool belt. State uses of flax. Describe cold part of temperate zone near Arctic circle.

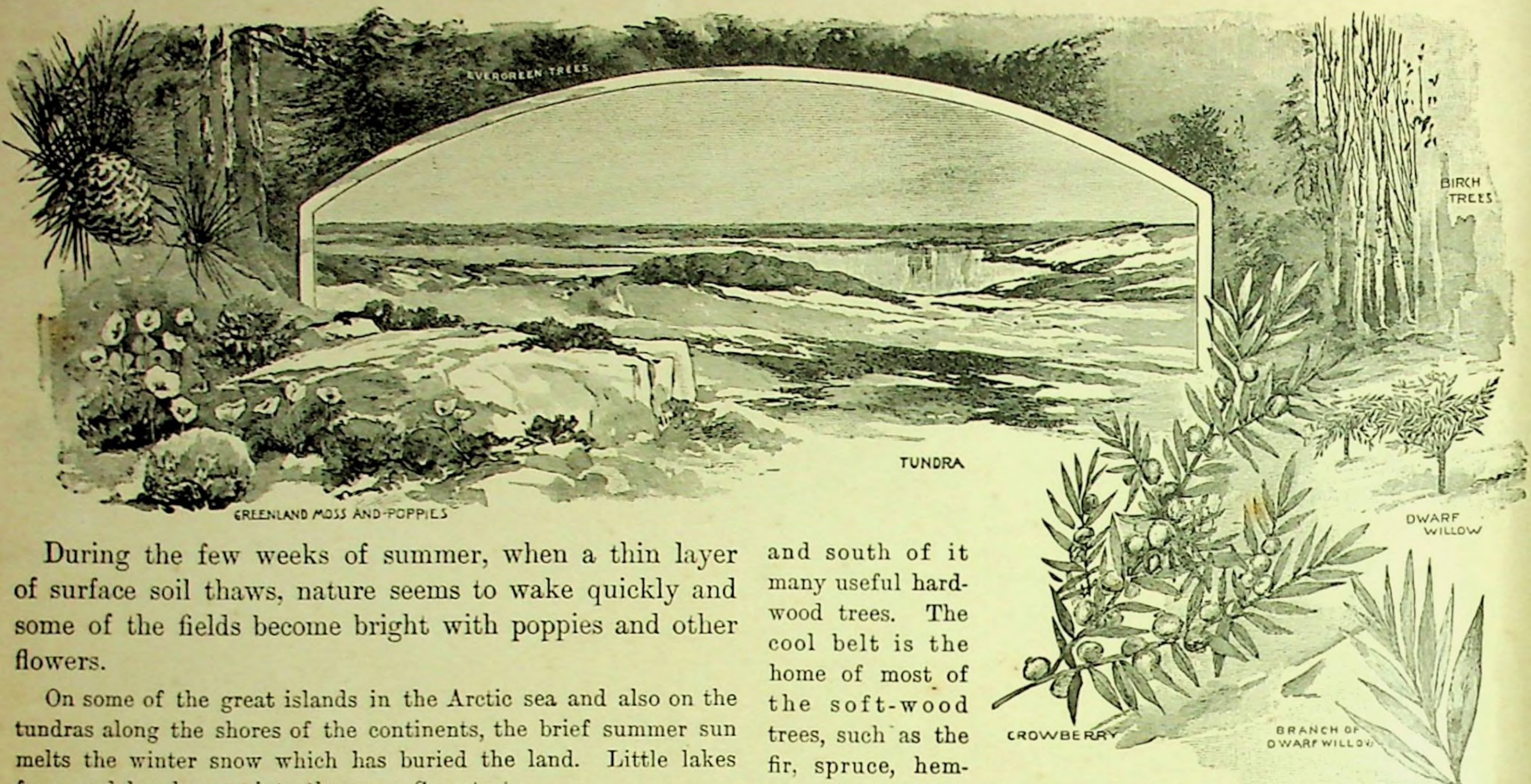
Topics:—Locate cool belt; describe its seasons and winds; wheat; corn; other useful grains of cool belt; orchard fruits; vegetables; soft-wood trees; lumbering; grass; flax; northern part of temperate zone near Arctic circle.

Forest of fir trees near the Pacific coast of United States

35. Plants of the North Frigid Zone

Within what circle does the north frigid zone lie? Describe the seasons of this belt. *See lesson 21.*

The dreary plains in the extreme northern part of the temperate zone, with only a few trees of pine, spruce, birch, willow and other hardy trees, merge into the still colder lands within the Arctic circle, where the great tree family dies away in dwarf birches and willows, only a few inches in height. There in the frozen marshes or *tundras* are also found mosses, lichens and stunted shrubs.



During the few weeks of summer, when a thin layer of surface soil thaws, nature seems to wake quickly and some of the fields become bright with poppies and other flowers.

On some of the great islands in the Arctic sea and also on the tundras along the shores of the continents, the brief summer sun melts the winter snow which has buried the land. Little lakes form, and brooks run into the sea. Sap starts in the dwarf willow stems, and Arctic hares come from their holes to feed on the bursting buds.

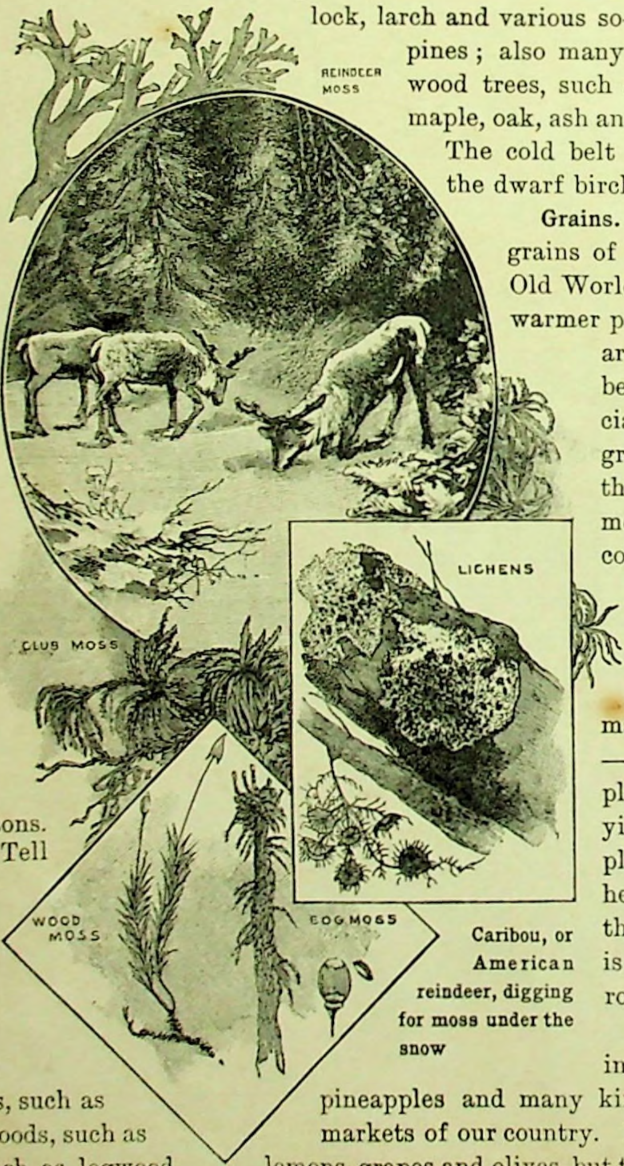
The slopes are then bright with poppies, saxifrages and other hardy flowering plants. Large patches of ground are also covered with orange and gray lichens. All these things are seen where only a few weeks before the land was wrapped in the snow and the darkness of the long Arctic winter.[1]

What have you learned about the days and nights within the Arctic circle? *See lesson 19.*

The large picture on this page shows what might be seen in or near the tundras of the Arctic shores. The evergreen fir trees merge into the dwarf birches and willows, so small that several trees might be crushed by a footstep. In the foreground are shown a few of the pretty poppies and a rock with moss on its surface. On the right is a branch of the crowberry, which grows far north. The picture of the tundra conveys a good idea of this dreary land.

Helps: — North frigid zone; describe its seasons. Describe the plant life of the north frigid zone. Tell what you can of its days and nights.

Topics: — North frigid zone; its vegetation; its days and nights.



Caribou, or American reindeer, digging for moss under the snow

General View of Plant Belts

Reading Lesson

Trees. The torrid zone is richest in palm trees, such as the cocoanut, sago and oil palm; in fine cabinet woods, such as ebony, rosewood and mahogany; in dyewoods, such as logwood. The warm belt is richest in forests of yellow pine, yielding lumber and naval stores; and this belt also shares with the belts both north and south of it many useful hardwood trees. The cool belt is the home of most of the soft-wood trees, such as the fir, spruce, hemlock, larch and various so-called pines; also many hardwood trees, such as the maple, oak, ash and elm.

The cold belt is the home of few trees, except the dwarf birches and willows.

Grains. Rice and millet are the principal grains of the hot and the cool belts of the Old World; much rice is also raised in the warmer parts of America. Corn and wheat are valuable crops both in the warm belts and in the cool belts, but especially in the latter. The hardier grains, such as rye, oats and barley, thrive in the cool belt. The common grains cannot be raised in the cold or frigid zone.

Fiber Plants. Cotton is the leading fiber plant of the hot and the warm belts. Several kinds of plants that supply fibers for making ropes grow in the same belts, — jute, in India; the banana or plantain of the Philippine islands, yielding Manila hemp; the century plant of Mexico, producing sisal hemp. The cool belt yields most of the fine flax, from which linen cloth is made; also the common hemp for rope making.

Fruits. The torrid zone is richest in fruits, such as bananas, breadfruit, pineapples and many kinds that are seldom seen in the markets of our country. Here are also found dates, oranges, lemons, grapes and olives, but the best lands for these five valuable fruits are in the warm belt. Many grapes are also produced in the cool belt, where apples, peaches, plums, pears and other delicious fruits thrive.

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[1] Adapted from Hayes' *The Open Polar Sea.*

36. Where Animals Live

One of the chief occupations of man is the care of animals. In this work he must observe certain laws of nature, for every kind of creature grows to suit its native haunts. By its teeth, feet and other parts of its body every animal is fitted to seize and devour its proper food.

The broad hoofs of the horse and the cow fit these animals to walk and run easily over grass land, where they find their food. Some of their teeth are suited to bite or break off the grass, and the other teeth for grinding it.

The eagle has sharp claws for seizing its prey, and a strong curved beak for tearing the flesh into bits for food.

Every kind of creature has the kind of covering that suits its native home.

Whales that live in polar seas have thick layers of fat, or *blubber*, to keep the icy waters from chilling their muscles. Birds that need lightness for flying and also warmth are covered with light, warm feathers. Lobsters have strong shells, not only to protect them from enemies, but to enable them to crawl among sharp rocks.

Animals make their homes in or near the places that supply their food.

Wild cattle search out the grass land. The white bear lives far out on the ice fields where it can catch seals and fish.

Moths of many kinds lay eggs on the leaves of fruit trees, and the leaves and the fruit become the food of the larvæ when the eggs are hatched. Spiders weave webs in places where flies and other insects flit about.

Among animals there is always a struggle for food and for life.

Insects in southern Africa sting and kill thousands of cattle. Tigers pounce upon deer. Many birds feed on worms and insects. Owls kill and eat field mice.

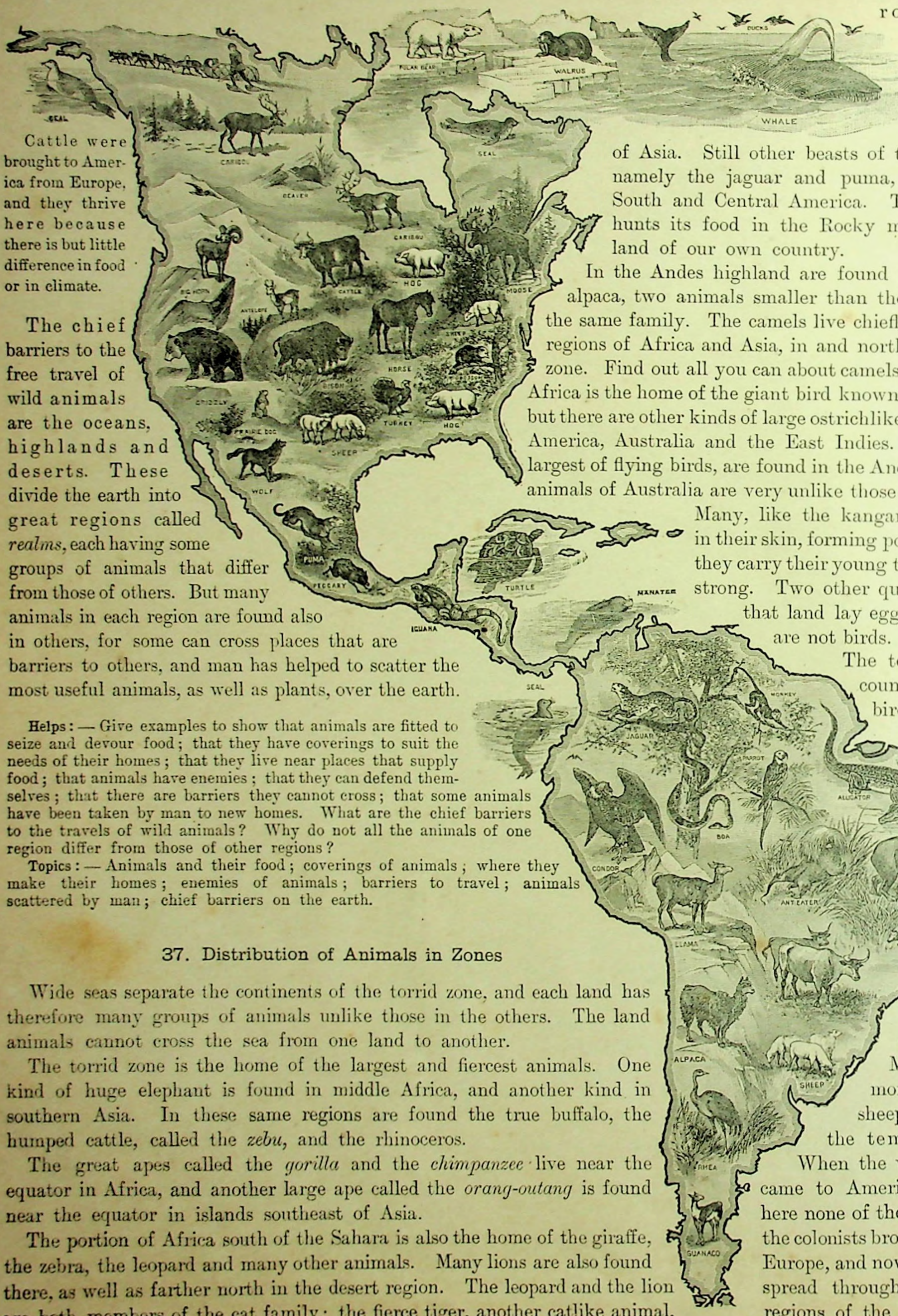
Every animal has special means of defense or escape from some of its enemies.

The cow tosses upon her horns. The horse kicks and bites. The deer runs swiftly. The frog dives into the water.

Nearly all animals have power to move about and seek new homes; but there are barriers they cannot cross. They may be swift and strong, but they cannot live in regions that do not supply their food.

Grass-eating animals cannot easily cross sandy deserts or high mountains. Animals that feed on forest fruits cannot cross wide grassy plains. Those that live on flesh must make their homes not far from the creatures they devour.

Many animals have been taken from their native homes and carried to other lands, but man has met with success in this task only when he has selected new homes suited to the needs of the animals, — especially with regard to their habits in getting proper food.



Cattle were brought to America from Europe, and they thrive here because there is but little difference in food or in climate.

The chief barriers to the free travel of wild animals are the oceans, highlands and deserts. These divide the earth into great regions called *realms*, each having some groups of animals that differ from those of others. But many animals in each region are found also in others, for some can cross places that are barriers to others, and man has helped to scatter the most useful animals, as well as plants, over the earth.

Helps: — Give examples to show that animals are fitted to seize and devour food; that they have coverings to suit the needs of their homes; that they live near places that supply food; that animals have enemies; that they can defend themselves; that there are barriers they cannot cross; that some animals have been taken by man to new homes. What are the chief barriers to the travels of wild animals? Why do not all the animals of one region differ from those of other regions?

Topics: — Animals and their food; coverings of animals; where they make their homes; enemies of animals; barriers to travel; animals scattered by man; chief barriers on the earth.

37. Distribution of Animals in Zones

Wide seas separate the continents of the torrid zone, and each land has therefore many groups of animals unlike those in the others. The land animals cannot cross the sea from one land to another.

The torrid zone is the home of the largest and fiercest animals. One kind of huge elephant is found in middle Africa, and another kind in southern Asia. In these same regions are found the true buffalo, the humped cattle, called the *zebu*, and the rhinoceros.

The great apes called the *gorilla* and the *chimpanzee* live near the equator in Africa, and another large ape called the *orang-outang* is found near the equator in islands southeast of Asia.

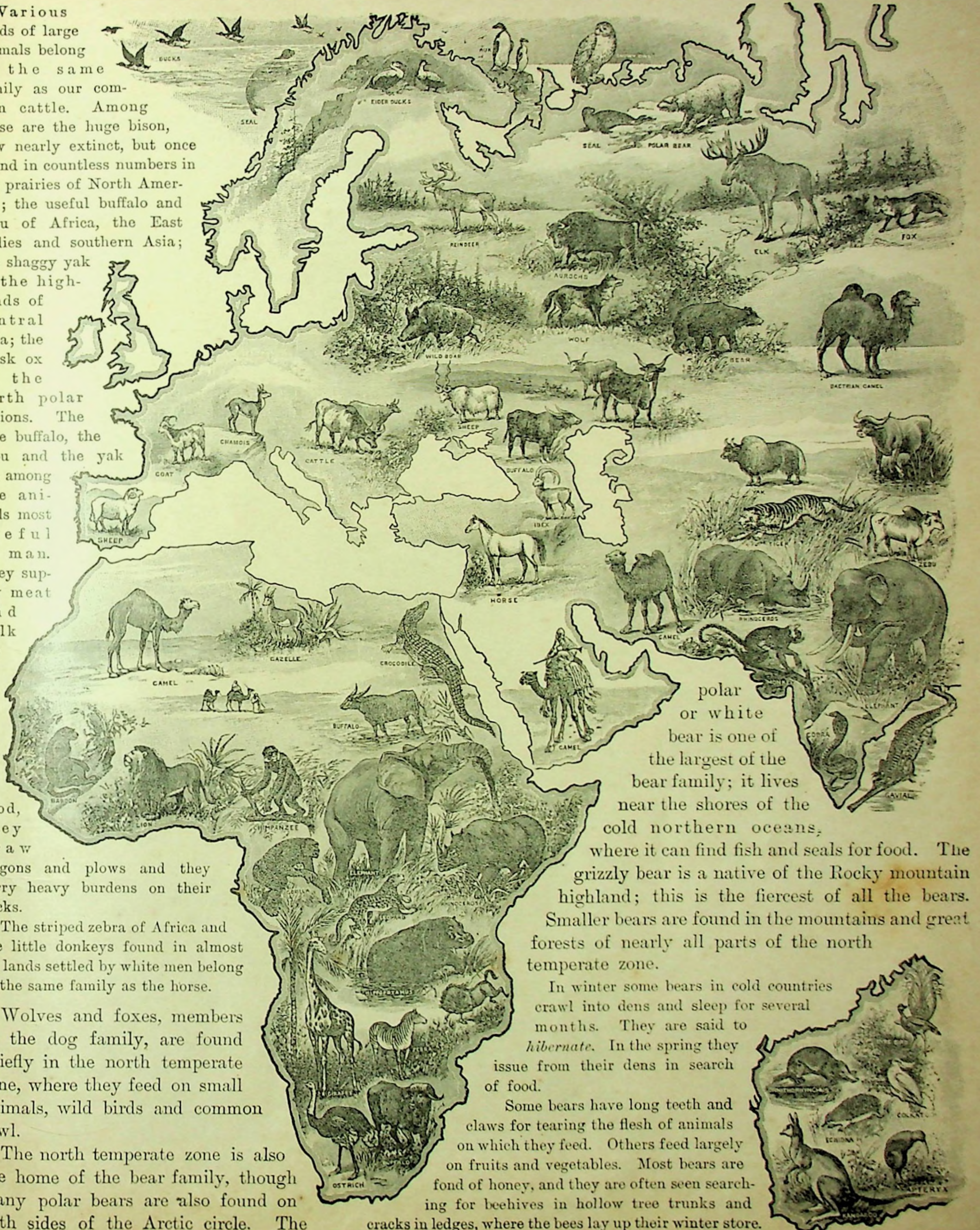
The portion of Africa south of the Sahara is also the home of the giraffe, the zebra, the leopard and many other animals. Many lions are also found there, as well as farther north in the desert region. The leopard and the lion are both members of the cat family; the fierce tiger, another catlike animal, roams from northern Africa far across the southern half of Asia. Still other beasts of the cat family, namely the jaguar and puma, are found in South and Central America. The puma also hunts its food in the Rocky mountain highland of our own country.

In the Andes highland are found the llama and alpaca, two animals smaller than the camel but in the same family. The camels live chiefly in the desert regions of Africa and Asia, in and north of the torrid zone. Find out all you can about camels and their uses. Africa is the home of the giant bird known as the *ostrich;* but there are other kinds of large ostrichlike birds in South America, Australia and the East Indies. Condors, the largest of flying birds, are found in the Andes. The wild animals of Australia are very unlike those of other lands. Many, like the kangaroo, have folds in their skin, forming pouches in which they carry their young till they become strong. Two other queer animals of that land lay eggs, though they are not birds.

The torrid zone has countless monkeys, birds and insects. Large crocodiles infest many of the sluggish rivers of this zone.

Most of the common cattle, horses, sheep and hogs are in the temperate zones. When the white men first came to America they found here none of these animals, but the colonists brought many from Europe, and now they are widespread throughout the fertile regions of the world.

Various kinds of large animals belong to the same family as our common cattle. Among these are the huge bison, now nearly extinct, but once found in countless numbers in the prairies of North America; the useful buffalo and zebu of Africa, the East Indies and southern Asia; the shaggy yak of the highlands of central Asia; the musk ox of the north polar regions. The true buffalo, the zebu and the yak are among the animals most useful to man. They supply meat and milk for food, they draw wagons and plows and they carry heavy burdens on their backs.



The striped zebra of Africa and the little donkeys found in almost all lands settled by white men belong to the same family as the horse.

Wolves and foxes, members of the dog family, are found chiefly in the north temperate zone, where they feed on small animals, wild birds and common fowl.

The north temperate zone is also the home of the bear family, though many polar bears are also found on both sides of the Arctic circle. The polar or white bear is one of the largest of the bear family; it lives near the shores of the cold northern oceans, where it can find fish and seals for food. The grizzly bear is a native of the Rocky mountain highland; this is the fiercest of all the bears. Smaller bears are found in the mountains and great forests of nearly all parts of the north temperate zone.

In winter some bears in cold countries crawl into dens and sleep for several months. They are said to *hibernate*. In the spring they issue from their dens in search of food.

Some bears have long teeth and claws for tearing the flesh of animals on which they feed. Others feed largely on fruits and vegetables. Most bears are fond of honey, and they are often seen searching for beehives in hollow tree trunks and cracks in ledges, where the bees lay up their winter store.

The deer family is widespread over the north temperate zone; some deer are found in the colder zone on the north and the hotter zone on the south. In the cold northern plains, near the Arctic circle, are found great numbers of reindeer in both the New and the Old World. The American reindeer is called the *caribou*. The elk of the northern plain of Russia and Siberia, and the American elk, or moose, of the dense forests stretching eastward from the Great Lakes to the sea, are the largest of the deer family. Millions of smaller deer are found in the forests and mountains of the north temperate zone.

The seal, the walrus and the whale are common in the cold seas of the far north. In summer many sea fowl also visit the Arctic shores to feed and to hatch their young; but, as a rule, the polar regions have very scanty plant and animal life.

The walrus is a large animal of the seal family. It has strong ivory tusks which it uses to defend itself and to dig shellfish from the bottom of bays. The walrus is hunted for its oil, ivory, hide and coarse flesh. Eskimos often kill these great animals.

As we study the various continents we shall learn more about the beasts, the birds and the fishes of the various lands and seas.

Helps: — Why cannot animals of one continent in torrid zone pass freely to other continents in same zone? Name four great animals found in middle Africa and southern Asia. Name some other animals of Africa. Name some large catlike animals and tell where they are found.

Where do most camels live? Name two animals of the camel family in the Andes. Which continents have birds resembling the ostrich? Where is the largest flying bird found? What is said of animals of Australia? Name some other creatures of torrid zone.

What is said of common domestic animals in America? Name and locate some animals in same family as cattle; same family as horses; same family as dogs.

Where is largest kind of bear found? Fiercest kind of bear? Where are smaller bears found? In what zone are largest deer found? Tell all you can about deer. What is said of life in polar regions?

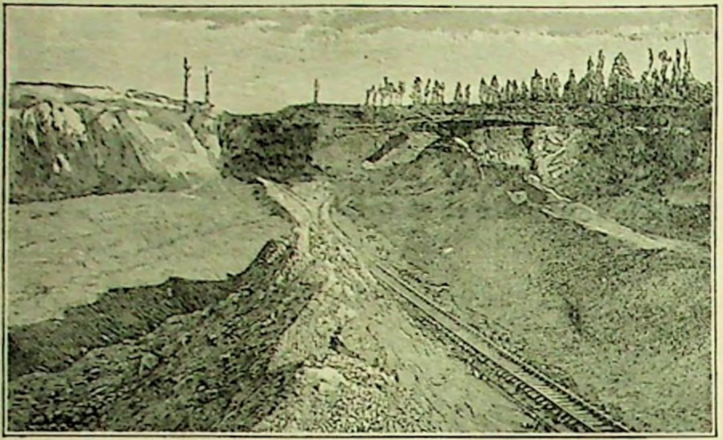
Topics: — Barriers to animals in torrid zone; animals found in Africa and southern Asia; manlike apes; catlike animals; camel family; ostrichlike birds; animals of Australia; other creatures of torrid zone; common domestic animals; animals in ox or cattle family; animals in horse family; doglike animals; bears; deer; polar regions.

MINERALS

38. Mines and Quarries[1]

Rocks from which metals are obtained are called *ores*, — such as iron ore, silver ore, lead ore. A few metals, such as gold and copper, are sometimes found in a pure or very nearly pure state; but most metals are united with other substances and must be treated by various processes to obtain the pure metal.

Iron. Iron is the most useful of all the metals. Various ores of iron are widely scattered over the earth.



Iron mine near lake Superior

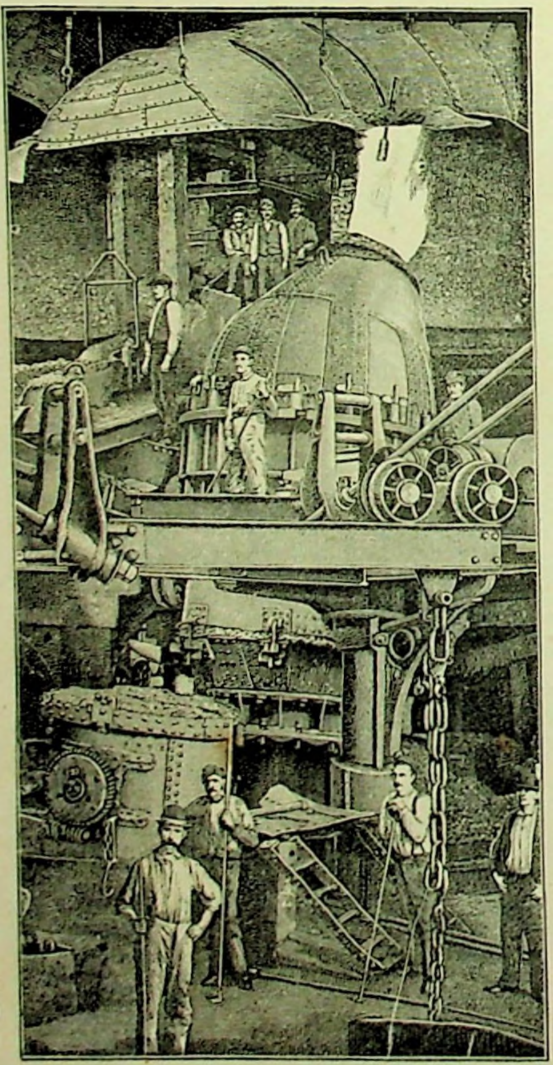
Iron and steel are used in making tools for workshops, machines for mills and factories, plates for the hulls of ships, engines and rails for railroads, frames for buildings, and also nails, locks, hinges and countless small articles that may be seen in any hardware store.

The process of extracting iron from its ores is called *smelting*, which means *melting*. The usual mode of smelting is as follows: The ore, with coke and limestone, is placed in a tall furnace, and the coke is then set on fire.[2] A hot blast of air is forced through the burning mass to strengthen the fire. When the iron melts from the ore it settles as a heavy liquid to the bottom of the furnace and is drawn off. The impure matter, or *slag*, floats on the surface and can easily be removed.

The furnace through which the blast of air is driven is known as a *blast furnace*. The molten iron is usually run into molds where it cools in short bars weighing about 100 pounds each. In this form it is called *pig iron* and is ready for shipment to the foundries, where it may be cast into the form of stoves, hydrants, posts and scores of other objects.

Iron that is to be used for certain purposes is put through a series of heating processes which change it to *steel*. This is used in making rails, engines, steamships, cutlery, tools and other articles that must withstand a great deal of wear and strain, or that must take keen edges.

Much of the steel is given its form by being *rolled*, or pressed between large wheels. The great plates from which the hulls of



Inside view of iron works

Note: — The picture shows a huge retort in which hot air is being forced through liquid iron, changing it to steel.

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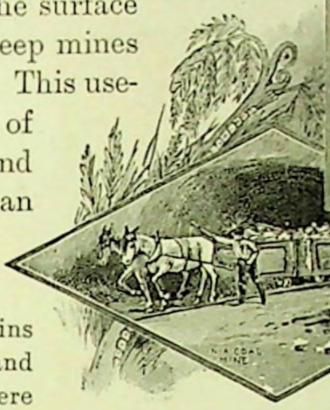
[1] To Teachers: — The distribution of minerals can best be studied under the various countries. This lesson will serve to make the pupils familiar with the processes by which nature has formed some common metals and building stones, and the means by which the ores are made to yield metals. Pupils can then study more intelligently the *distribution* over the world.

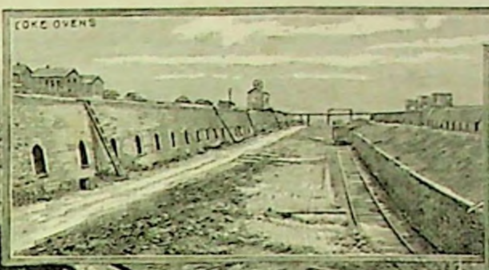
[2] In some places natural gas is taken from the ground and used for fuel. Limestone mixed with the iron ore causes the iron to flow out of it more quickly when heated.

some ships are made, and most of the rails seen on railroad beds, are rolled steel.

Name some things that you can see that are made of iron or steel.

Coal. Coal is found in layers or beds between other layers of rock. In some places the rock has been worn away, and the coal may be seen at the surface of the earth; but in other places deep mines are dug to reach the layers of coal. This useful mineral is found in many parts of the earth. It is doubly useful if found near beds of iron ore, for the two can then be used in the process of making iron and steel.


Hauling coal in a mine



Ovens in which coal is changed to coke

Making charcoal

Each bed of coal consists of the remains of great numbers of plants, mostly ferns and mosses. Long ages ago the coal regions were lowlands, and these plants grew in the lowland swamps. A swamp may have continued for centuries making its plant-layers thicker and thicker, as the trees and smaller plants fell in the water. At times the muddy streams running into the swamps buried layers of these plants in sand and clay.

After the burial of one layer in the sand and clay, perhaps another thick layer of the swamp plants fell and these were in turn buried; then another and another followed.

As the layers of sand over the plants hardened they became sandstone; the clay hardened into shale; the swamp plants slowly changed to coal, and fossil leaves or trunks of the mosses and ferns are often found in the coal.

Thus, there are generally several beds of coal, one over another, in a single coal field, showing that several swamps formed there. Some of the coal beds are only a few inches thick; others are several feet.

Coke is made of soft coal from which certain gases have been driven by heating.

Large quantities of soft coal are put into ovens that shut out most of the air. *See picture.* These are then heated, and some of the gases in the coal are driven off or burned. Coke gives a stronger and steadier heat than coal and is therefore used in making fine grades of steel that need this kind of heat.

Charcoal is made from wood.

Great heaps of wood are covered with turf, so as to admit little air. *See picture.* The wood is then slowly burned till nearly everything is driven off but the *carbon* or *charcoal.* Charcoal resembles true coal, but is much the lighter and more porous.

Petroleum and Natural Gas. Crude petroleum comes in a liquid state from the ground. From it are made kerosene, gasoline, benzine, vaseline, various oils and many other useful articles.

The oil known as *petroleum,* meaning *rock oil,* and also natural gas are thought to result from the slow decay of plants and animals buried ages ago in the sands now changed to rocky layers.

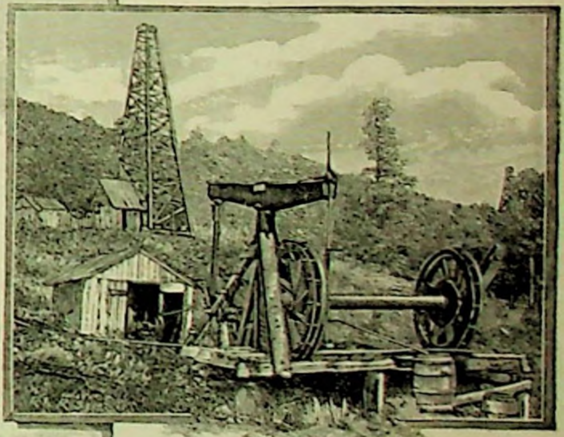
The oil is reached by sinking pipes down to the oil-bearing layers of porous rock. Some of these pipe wells are more than a fourth of a mile deep.

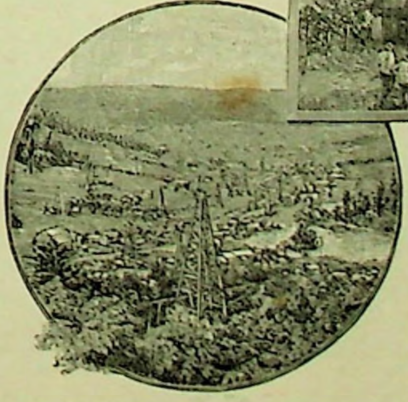
Many thousand wells have been sunk in various parts of the earth. Some of these no longer yield oil; others yield only a few barrels a day; while from others many thousand barrels of the crude oil gush out in a single day.

When the natural flow of a well ceases oil is often obtained by pumping. In order to try to increase the flow, nitroglycerin is sometimes exploded at the bottom of wells. This breaks up the porous rock and in many instances causes the oil to flow much more freely, but at other times the explosion, or "shooting," of the wells stops the flow.

One of the pictures on this page shows a "shot well" at the moment of the explosion. A great column of oil is thrown into the air. Another picture shows an engine and pump at work lifting the oil out of a well. The oil is generally pumped into huge tanks. Back of the engine house stands a *derrick* over another oil well. The round picture shows many derricks in a Pennsylvania oil town.

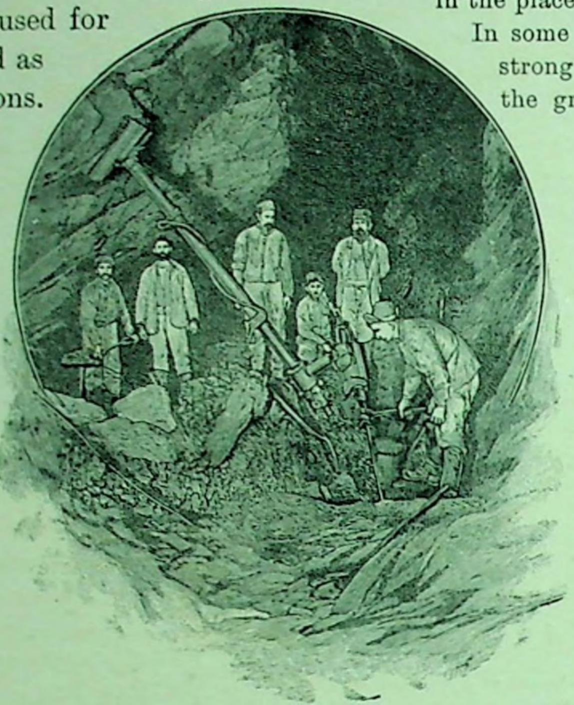
A well in which nitroglycerin has been exploded


Oil pump


An oil region in Pennsylvania

When petroleum is heated it gives off different vapors as the liquid becomes hotter and hotter. These vapors are led away in pipes. The vapors cool and are collected in separate tanks. The various vapors form gasoline, naphtha, benzine, kerosene and other useful liquids. Vaseline is made from the residue left in the main vat after heating. Many kinds of oils for oiling machines are made from petroleum.

Natural gas is used chiefly for heating purposes. The gas can be regulated to give strong and steady heat, and this fuel is therefore of great value in iron mills and glass-works, although coal or coke can be used for fuel in both. Natural gas is also used as a fuel in dwellings near the gas regions. In places having gas wells the low cost of the gas for fuel has caused very rapid growth in manufactures.


Copper mine, 2000 feet deep, near lake Superior

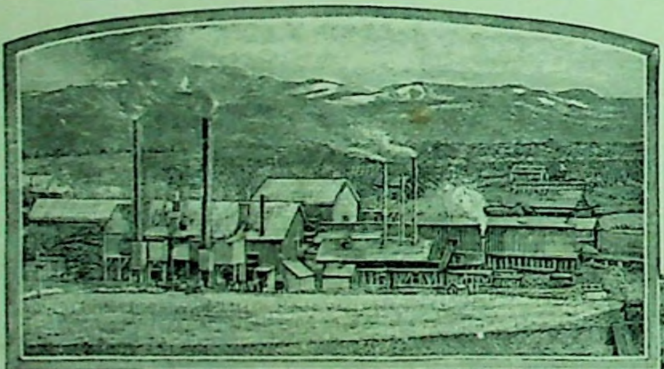
Natural gas and petroleum doubtless have a common origin in the decay of plants and animals in ancient layers of sand or mud forming rocks having many pores. The gas, like the oil, fills the pores and runs out as soon as pipes are sunk through upper layers of rocks, such as shale or clay rock, that have long prevented them from escaping.

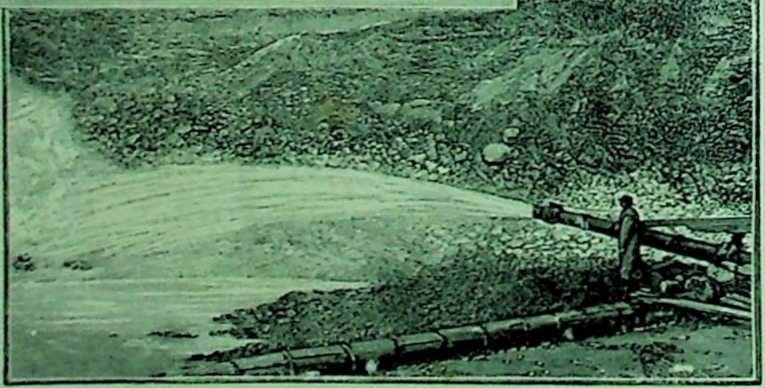
Many of the gas wells that once flowed with great pressure have now stopped flowing. Others now flow with weak pressure; still others have been flowing steadily for many years.

Copper. Iron is the only metal more useful than copper. The latter is generally used mixed with other metals, and these are of greater service than pure copper.

Thus copper is mixed with gold to make gold coins. The pure gold is so soft that it would not last long as money. Gold jewelry also contains copper, to make it wear better.

The useful metal called *brass* is made by melting together copper and another metal known as *zinc*. The bronze of which so many beautiful statues are cast is made of copper and tin melted together.


Smelter


Tearing down a cliff of gold-bearing gravels

Gold and Silver. Gold and silver are called *precious metals*, but they are not nearly so useful as iron or copper. The value of the precious metals is largely due to their scarcity.

Gold is found pure or almost pure in nature. It is often taken from veins of quartz rock or from old river gravels formed largely of particles washed from veins of quartz.

The gold may be separated from quartz by crushing the rock and then mixing the mass with quicksilver and water. The gold and quicksilver unite to form a new compound. This is then heated and the quicksilver is driven off as vapor, leaving the gold. The vapor of the quicksilver is cooled and can be used again.

The building in which the gold is taken from the rock is called a *smelter*.

There are other ways of taking gold from rocks, by using acids in the place of quicksilver.

In some places where gravel beds are rich in gold strong streams of water are sent from pipes against the gravel to loosen it. The gravel is then put into a long trough in which water is running over cleats or grooves holding quicksilver. The gold is taken in by the quicksilver, and the gravel is washed away.

The ores of silver are treated in various ways to obtain the precious gray or white metal of which so many useful and beautiful objects are made.

Gold and silver are found in nearly all mountainous regions of the world. We shall learn where the richest mines are when we study the different countries.

Building Stone. The principal kinds of stone used for building purposes are limestone, marble, granite, sandstone and slate.

Try to get samples of each of these kinds of stone and examine them carefully.

Limestone is made of the tiny shells of creatures that lived ages ago in the sea. As the little creatures died the shells settled on the bottom, making a thick bed. In time this became hard rock and formed limestone. It is called *limestone* because it is mostly made of the lime that was in the shells. Some limestone is made of coral.

In some places in the earth limestone has been greatly heated and firmly pressed, making it hard and fine, with countless crystals. This form of limestone is called *marble*. It is not only used for building purposes, but it is also carved into many beautiful statues and vases. This rock will take a fine polish.

Granite is another rock that has been formed deep down in the earth, under great pressure and with great heat, and having crystals throughout its mass. If you will examine a piece of granite you can doubtless easily see the crystals, — some white, some pink or green, some perhaps in thin shining scales. Sometimes there are also black crystals in the rocks. The value of granite is due largely to its hardness and the fact that it takes a beautiful polish. One of the pictures on the next page shows men carving statues in granite.

When sand forms in deep beds in water, it is sometimes hardened into rock. This is known as *sandstone*. It is very useful for making walls of buildings; and some pure sandstones are melted and changed into glass. One of the pictures on the next page shows men blowing forms in glass made of sandstone. It is the quartz sand in the sandstone that melts and forms glass. Much of the petroleum and natural gas of the world is found in porous sandstone.

When beds of clay harden and change to stone in thin smooth layers, we call such layers *slate.* This stone is widely used for covering roofs of houses, and in broad thick sheets it is used as flagging for sidewalks. Do you know another use for this stone?

Building stone of various kinds is found in most of the countries of the world.

Carving statues in New England granite

Helps: — What is meant by an ore? Explain how iron is taken from its ore. What is steel? Name some uses of iron and steel.

Explain how coal beds were formed. What is coke? What is charcoal?

What is petroleum? How is it obtained? Name some liquids made from petroleum. What is vaseline? How is natural gas obtained? What are its uses?

Name the two most useful metals. State some uses of copper.

What are the precious metals? Tell how gold is separated from quartz. How may gold be separated from gravel? Name some uses of gold; of silver. Why is not pure gold used to make coins and jewelry?

Name five kinds of stone used for building purposes. Of what is limestone made? What is marble? Why is granite useful for building purposes? State some of the uses of sandstone. What is slate? Tell some of its uses.

Topics: — Ore; how iron is taken from ore; steel; coal beds; coke; charcoal; petroleum; products from petroleum; natural gas and its uses; gold; silver; limestone; marble; granite; sandstone; slate.

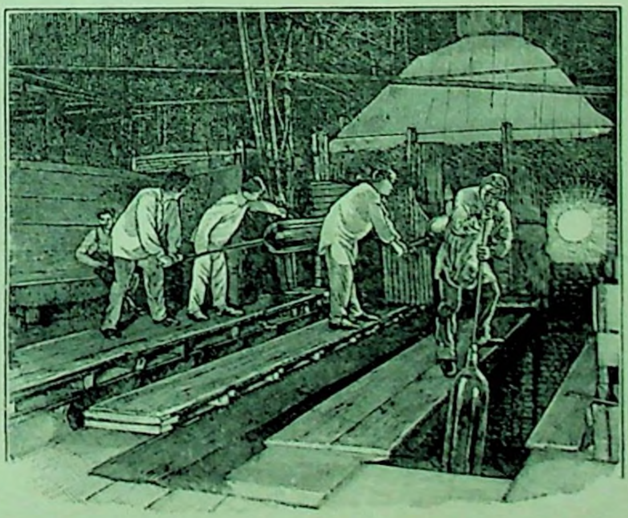
COMMERCE

39. Highways of Trade

No people of any country can produce all the articles they need, though they may produce a surplus of some. But they can buy what they need from people of other lands and can sell some of the articles which they themselves raise on farms, dig out of mines or make in workshops.

Thus, our country has cotton, wheat, copper and scores of other useful things to sell, but we must send to other lands for most of our coffee, tea, spices and many other products.

The buying and selling of goods is called *trade;* but trade on a large scale may be called *commerce. Domestic commerce* is that carried on between various parts of one country; *foreign commerce* is that carried on between one country and another.



Glass blowing

At the stores or shops we buy articles for use in our homes. Perhaps these retail stores in turn trade with larger wholesale stores. In order to supply the great wholesale stores, perhaps shiploads or trainloads of goods are brought from foreign lands or from other parts of the same country. If from a foreign land, we may call the buying *foreign trade* or *foreign commerce;* if from some part of the same country, it is *domestic trade* or *domestic commerce.*

The principal highways of trade are oceans, railroads, lakes, rivers and canals.

The sea spreads in one vast body round the continents, so that a ship can go from any one of the oceans to the others. The oceans form the main highways of commerce between countries far distant from one another.

Coast cities in which freight is handled for ocean commerce are called *ports* or *seaports.* The best ports are on deep and spacious harbors sheltered from gales and storm waves.

The ports are located where they can most easily handle products carried by ships. As freight charges are lower by water than by trains or wagons on land, the cities are built just as far inland as the deep and safe waters reach towards the producing regions, — whether farms, forest, mines or manufacturing districts. The goods to be sent from the country, or the *exports,* then need to be carried only the shortest distance necessary to reach the ships; and the goods brought by the ships, or the *imports,* are so much the nearer to the people who are to use them.

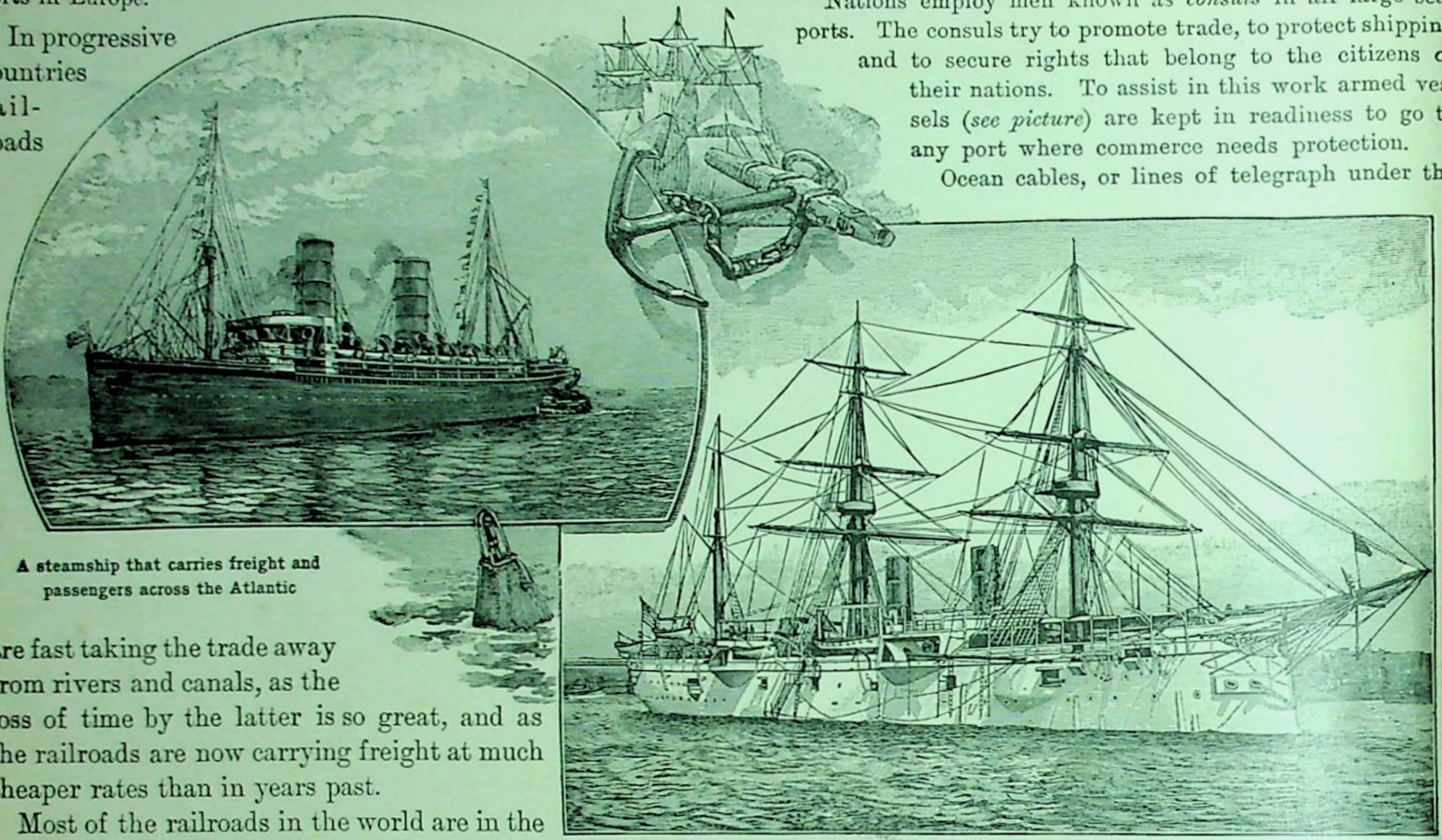
The rivers that are of greatest use as routes of trade are those which are deep and slow, and which flow through the most productive regions. They are doubly useful if they flow in the direction in which most of the people live who are to use the products, or who are to send back goods for the people along the great rivers.

Thus, the Mississippi river and its great branches flow through the middle portion of our country, where there are grainfields, forests, grazing lands, cotton fields, sugar plantations and cities having many mills and workshops. Immense quantities of products are therefore freighted on these streams. The lower part of the main river is broad and deep, and large ocean steamers go many miles up the stream to unload the imports they have brought and to load articles of export.

Large lakes and inland seas that extend in the direction of trade are important aids to commerce.

Thus, the Great Lakes along the northeast border of the most fertile part of our country are of more value to trade than any other lake route or any river route in the world. Not far from the shores of these lakes are wheat and corn fields, pastures, coal mines, iron mines, copper mines, oil wells and large manufacturing cities. A very large portion of the surplus products of this region are bought by the people of Europe. The Mississippi river runs southward, while Europe lies far to the east; the river therefore is not the best route for this trade of the lake region with Europe, but the lakes extend in just the right direction to help in sending these goods eastward. From the lakes most of the goods are sent overland by railroads or by canal, to the great seaports along the eastern coast, where ocean steamers are ready to freight the goods to ports in Europe.

In progressive countries railroads are fast taking the trade away from rivers and canals, as the loss of time by the latter is so great, and as the railroads are now carrying freight at much cheaper rates than in years past.



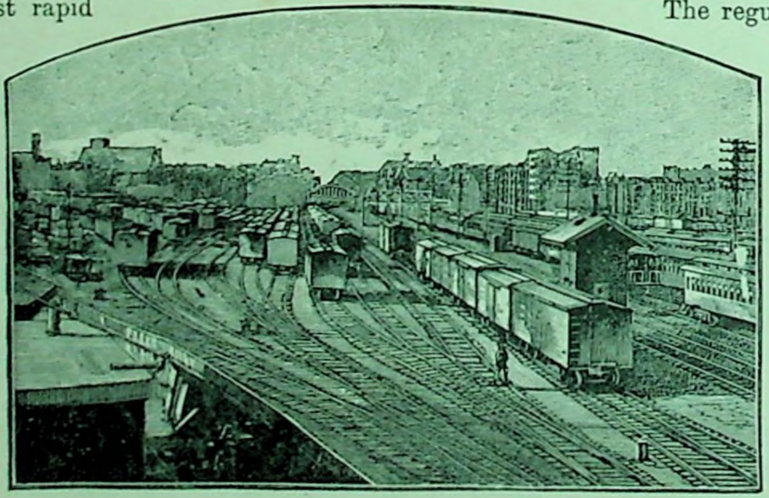
A steamship that carries freight and passengers across the Atlantic

One of the war vessels or cruisers that are always ready to go to any port in the world to guard the commerce or other interests of the United States

Most of the railroads in the world are in the United States and in Europe, and nearly one half are in our country.

The railroads of the United States are eight times as long as the navigable rivers, or long enough to reach about eleven times round the earth. If these railroads were destroyed, all the gold and silver money in the world would not pay for rebuilding them.

In early times inland towns grew most rapidly along the rivers, lakes and canals, but now the most rapid growth of inland towns in many parts of our country is due almost wholly to railroads. The best locations of course are where railroads cross each other or where the roads reach navigable waters. Nearly every city and large town in our country can now be reached by one or more lines of railroads.



Freight yard, Boston

The commerce of the world is of such great importance to all civilized nations that people seek in every possible way to help and protect it.

Lighthouses are built on dangerous coasts and along the main channels of harbors and rivers. Beacons, buoys, bells and fog horns are placed where they are most likely to give warning of danger. Light-ships, with lights, bells and horns, are anchored near shoal places. Along many parts of the coast men and boats are stationed to assist vessels in distress, and to try to save the lives of sailors if the vessels are wrecked.

Mud is dredged from the bottom of harbors to deepen them; rocks are removed from channels; sea walls are built to shield vessels from storm waves.

Nations employ men known as *consuls* in all large seaports. The consuls try to promote trade, to protect shipping and to secure rights that belong to the citizens of their nations. To assist in this work armed vessels (*see picture*) are kept in readiness to go to any port where commerce needs protection.

Ocean cables, or lines of telegraph under the sea, are a valuable aid to commerce. When a steamer sails with freight for a foreign port, agents abroad can be cabled when to expect it and what to do with it. Consuls can cable for help in times of trouble, and important news of all kinds for newspapers can be sent along these wires under the sea.

The regular mails and the lines of telegraph and telephone on the land are of so much assistance to trade that when a storm blocks the mail trains and blows down the wires the wholesale trade almost ceases. The telephone also holds an important place in retail trade.

Helps: — Define trade and commerce. What is difference between foreign and domestic commerce? What are the principal highways of trade? What is meant by seaport? By exports? By imports? What rivers are of greatest use in commerce? Illustrate by Mississippi river. Explain how the Great Lakes aid commerce. What is said about railroads of United States?

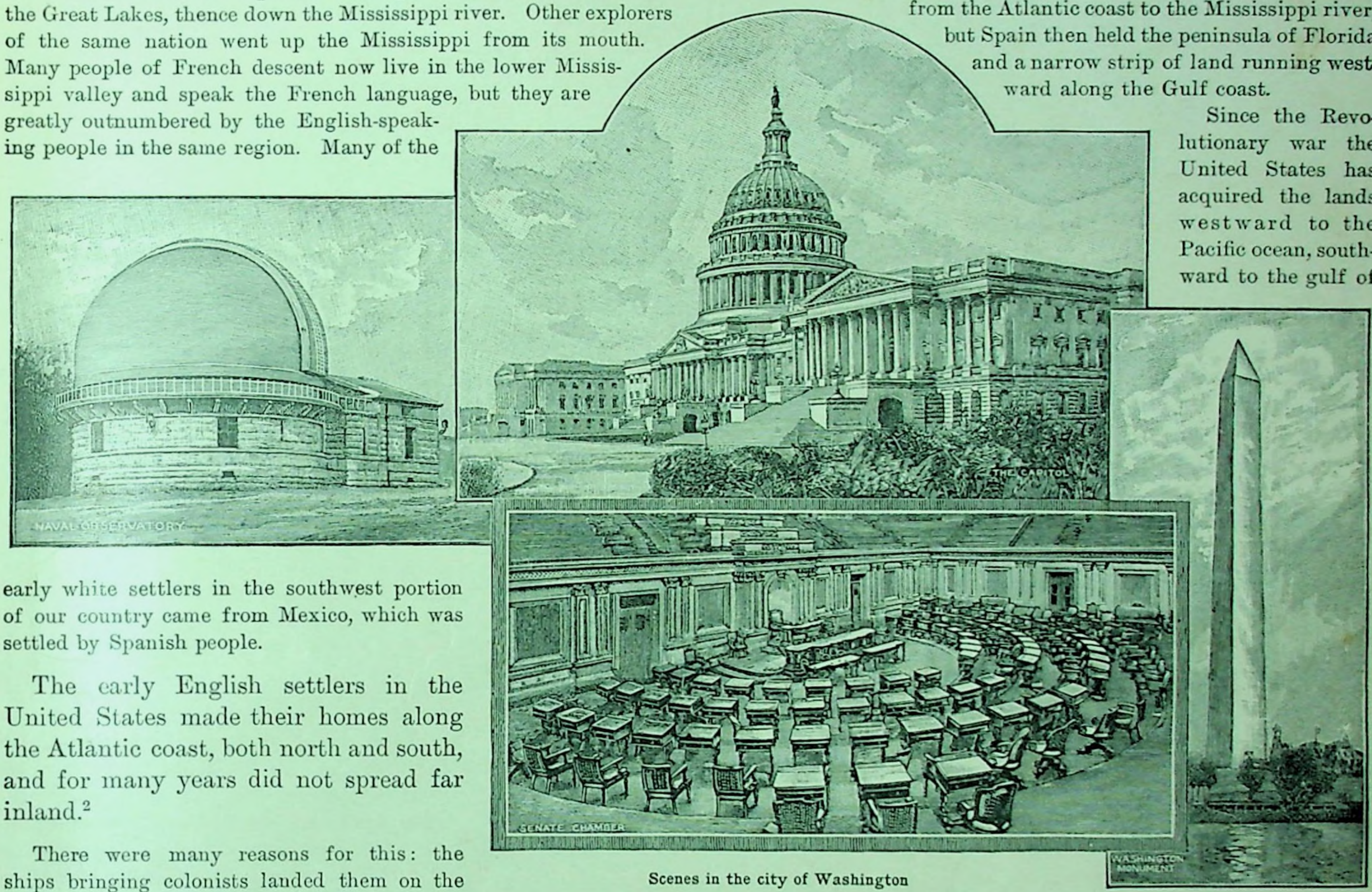
Tell how nations improve waterways. Explain some duties of consuls. Of what use are ocean cables? Name three means of communication between cities.

Topics: — Trade and commerce, foreign and domestic; principal routes of trade; seaports; exports; imports; oceans in commerce; rivers; lakes; railroads; how nations improve waterways; consuls; ocean cables; other lines of communication.

40. People of the United States[1]

After the famous voyage of Columbus, in 1492, the various nations of western Europe sent expeditions to explore and settle the New World. Foremost among these nations were England, France and Spain.

Some of the French explorers went up the St. Lawrence river and the Great Lakes, thence down the Mississippi river. Other explorers of the same nation went up the Mississippi from its mouth. Many people of French descent now live in the lower Mississippi valley and speak the French language, but they are greatly outnumbered by the English-speaking people in the same region. Many of the early white settlers in the southwest portion of our country came from Mexico, which was settled by Spanish people.



Scenes in the city of Washington

The early English settlers in the United States made their homes along the Atlantic coast, both north and south, and for many years did not spread far inland.[2]

There were many reasons for this: the ships bringing colonists landed them on the east coast; many wished to remain there to trade with the people of Europe; the rugged Appalachian highland, covered with forests, stood between the coast settlements and the prairies; there were no rivers flowing from the prairies to the east coast of the United States; European nations hostile to the English claimed the St. Lawrence and Mississippi river systems, and for many years the English colonists could not use those waterways; moreover, warlike Indian tribes held the lands a little back from the coast.

At length the year 1776 arrived, and with it came great changes in the colonies, then thirteen in number. Great Britain had made the colonists pay taxes which they had no share in voting, but in that year the colonies took the name of states and chose brave men who met in Philadelphia and voted that their land should no longer be under British rule. After a long struggle, known as the *Revolutionary war*, Great Britain gave up her claim to what had been the thirteen colonies and also to lands claimed by these colonies westward to the Mississippi.[3]

In 1776 the colonies voted to form "free and independent" states, and all the states together formed a Union which a few years later became the *United States of America.*

At the close of the Revolutionary war the United States reached from the Atlantic coast to the Mississippi river, but Spain then held the peninsula of Florida and a narrow strip of land running westward along the Gulf coast.

Since the Revolutionary war the United States has acquired the lands westward to the Pacific ocean, southward to the gulf of Mexico, and also the great peninsula of Alaska, besides several groups of islands. The area, including Alaska and the island possessions, is now a little less than 4,000,000 square miles.

After the Revolutionary war many people moved westward along the river branches, then across the Appalachian highland and by way of the Great Lakes to the prairies, where the fertile lands were found ready for millions of settlers. As wagon roads, canals and railroads were built, the growth of the country became very rapid. Forts and trading stations on the rivers, the Great Lakes, the canals and the railroads soon grew to be towns and cities.

While the upper half of the Mississippi valley was thus being settled a great change was also taking place in the southern half of the country. Thousands of acres were

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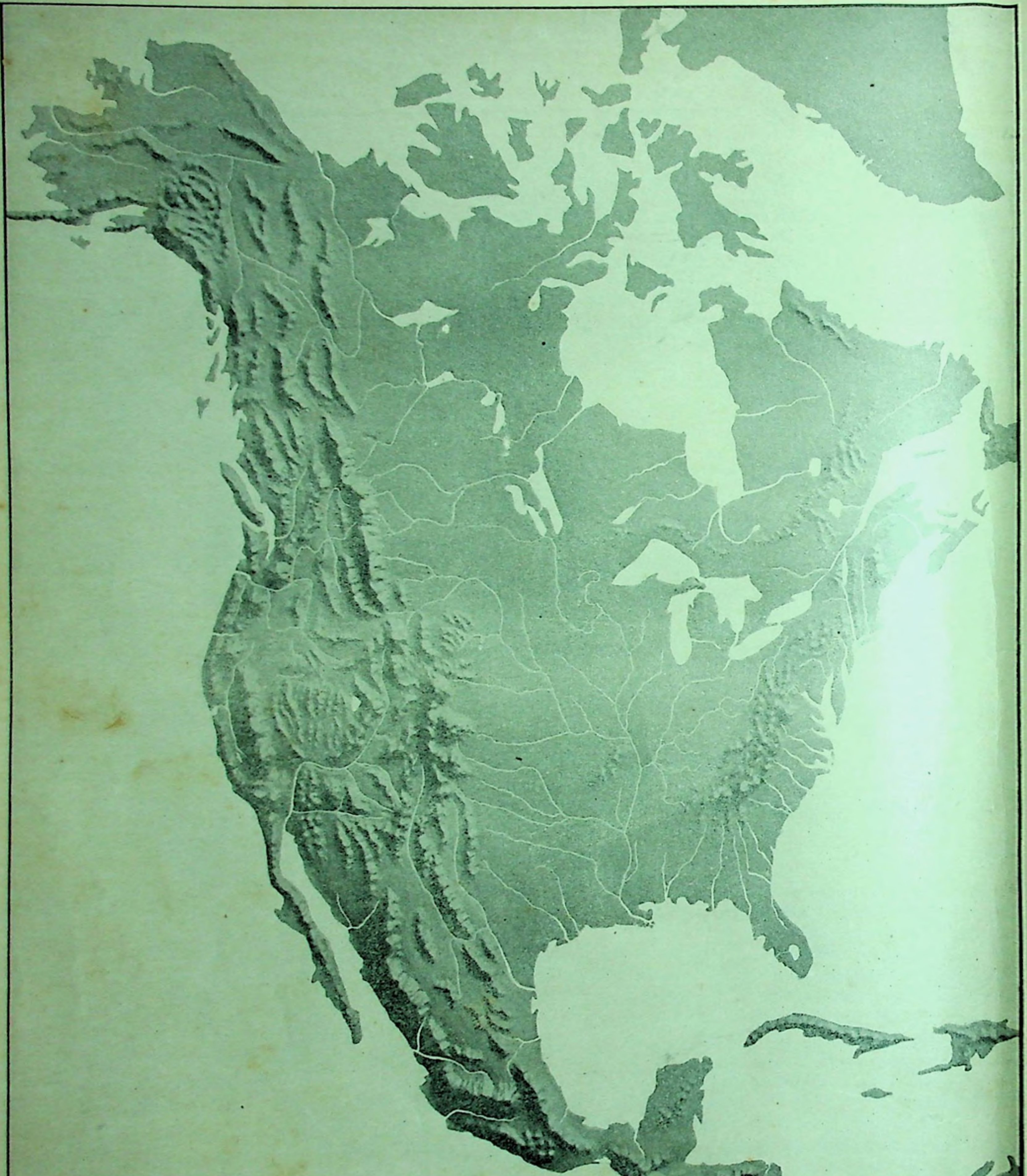
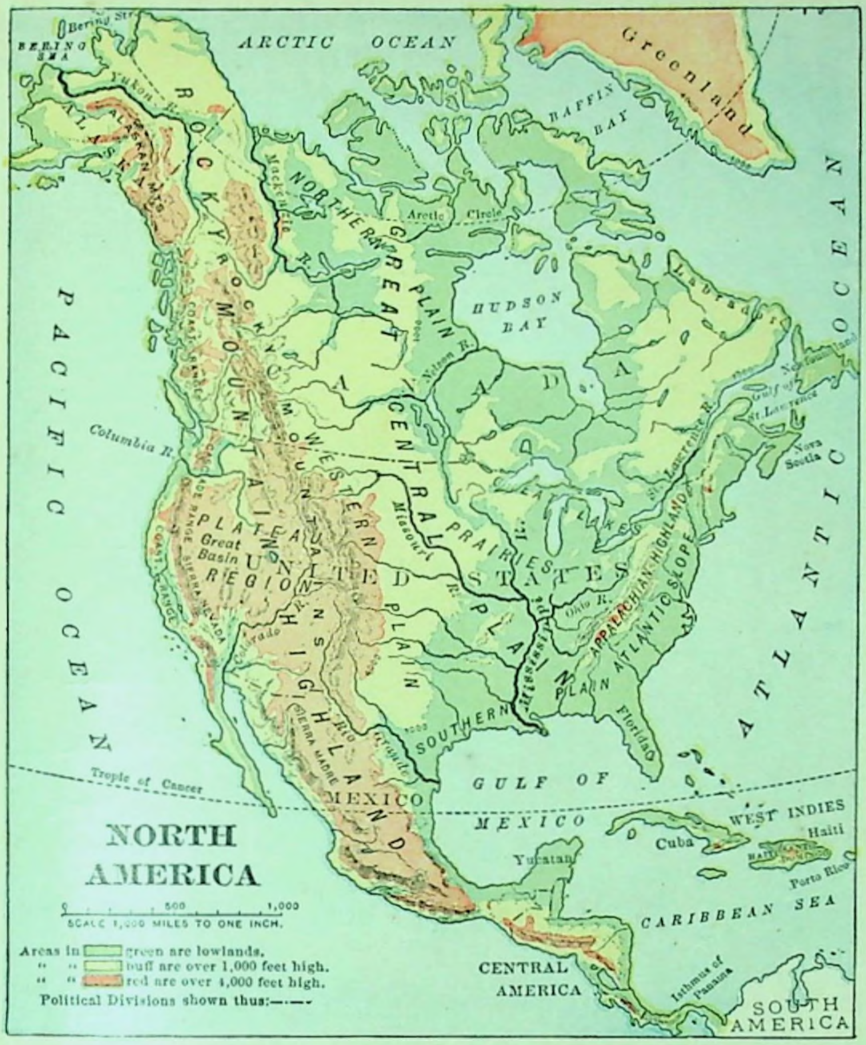
[1] There is a map of the United States on pages 72 and 73.

[2] Among the important settlements made by colonists of nations other than the British were the following: the Dutch along the Hudson river; the Swedes near the mouth of the Delaware river; the French around Charleston, S.C., and in the Mississippi valley; the Spaniards in Florida.

[3] They were: New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina and Georgia.



RELIEF MAP OF NORTH AMERICA



planted with cotton, and the region grew very rapidly in wealth and population.

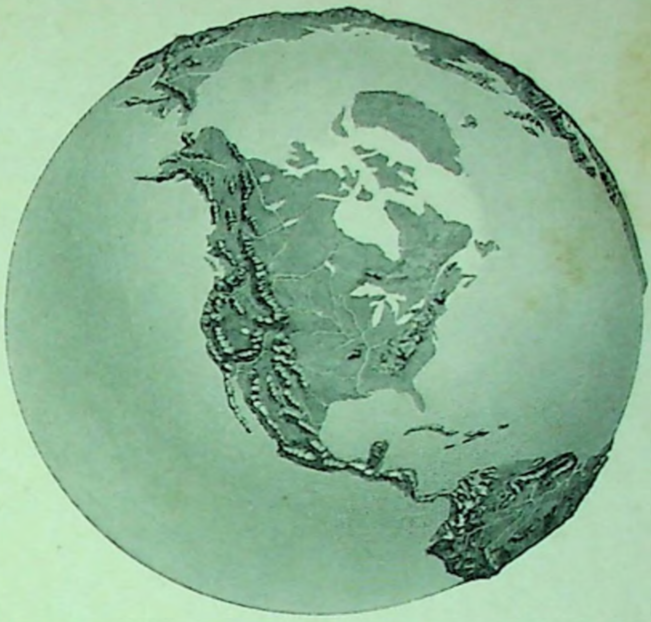
Soon after the first English colonists came to this country they received a cargo of Negro slaves from Africa. As the colonies grew and more laborers were needed, many more people of the black race were brought to this country. They proved to be of greatest service in the cotton fields of the South. The invention of the cotton gin (*see lesson 33*), and also of better machinery for weaving cloth, created a great demand for cotton and therefore for cheap labor. Later all the slaves were freed.

There are about 10,000,000 Negroes in the United States.

About seventy years ago gold was discovered in California, and many thousand people flocked there in search of fortunes. Copper, silver and gold have also been found in other parts of the Western highland, and towns and cities have grown up in many places near the rich mines.

Some of the gold seekers went in wagons or on horseback across the dry Western plains and the Rocky mountain highland. Others reached the gold fields by way of the isthmus of Panama, — going by water to and from that neck of land. Shiploads of gold seekers went round cape Horn and thence up the Pacific coast to San Francisco. Gold in the mountains first drew settlers in large numbers to the far West, but products of far greater value are now taken from the grainfields, the vineyards, the fruit groves and the pastures of some of the Western states.

(*Continued on page 64.*)



Map Studies[1]

What oceans bound North America? What continent is on the south? What continents almost unite at Bering strait? What sea and ocean does this strait connect? Locate Hudson bay; gulf of Mexico. What bodies of water partly surround the peninsula of Florida? The peninsula of Labrador? Alaska?

Sketch the general outline of North America,[2] using only three straight lines. In what general direction does the east coast extend? The west coast? The north coast? Which coast is the longest?

Draw the north coast of this continent; the west coast; the east coast. Which is the most irregular?

Which part of North America has the most high land? What have you learned about the Rocky mountain highland? *See lesson 13.* On which border of this highland is the range called the Rocky mountains? The range known as the Sierra Nevada? The Cascade range? The Sierra Madre?

Where is the Appalachian highland? In what direction does it extend? Is it higher or lower than the Rocky mountain highland? Is it longer or shorter? Is it wider or narrower? What does lesson 13 tell about this highland?

On which side of the Rocky mountains are there vast plains? What does lesson 13 tell about these plains? What does lesson 21 tell about the seasons in these plains? What bodies of water bound the Central plain on the north? What gulf is on the south? What highland is on the east?

What name is given to the part of the Central plain near the Arctic ocean? South and west of the Great Lakes? East of the Rocky mountains? Along the shore of the gulf of Mexico?

In which part of the Central plain is the Mississippi basin? What is its general slope? What highlands are on the east and west sides of this basin? From which side does the Mississippi receive the longest branch streams? Name the longest west branch; the longest east branch.

What river forms the outlet of the Great Lakes? Into what gulf does this river flow? Name the lakes in this group, beginning with the one farthest inland. *See map on page 65.* What two countries do these lakes partly separate? What river in part separates the United States from Mexico?

Which portion of the Central plain is in the basin of the Nelson river? Into what bay does this river flow? Describe the course of the Mackenzie river. Which part of the Central plain does it drain? What long river flows from Canada through Alaska? Into what sea does it flow?

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[1] To Teachers: — It is an excellent plan to train pupils to study the relief map itself; at first without the aid of questions, then to use the questions as a guide to important details. Attention is called to the fact that by doubling *this* leaf or any other opposite the relief map of a continent, pupils can see the colored and relief maps at the same time.

[2] For drawing and modeling, see *guide map* in the supplement.

About one third of a million Indians live in the United States. *See lesson 25.*

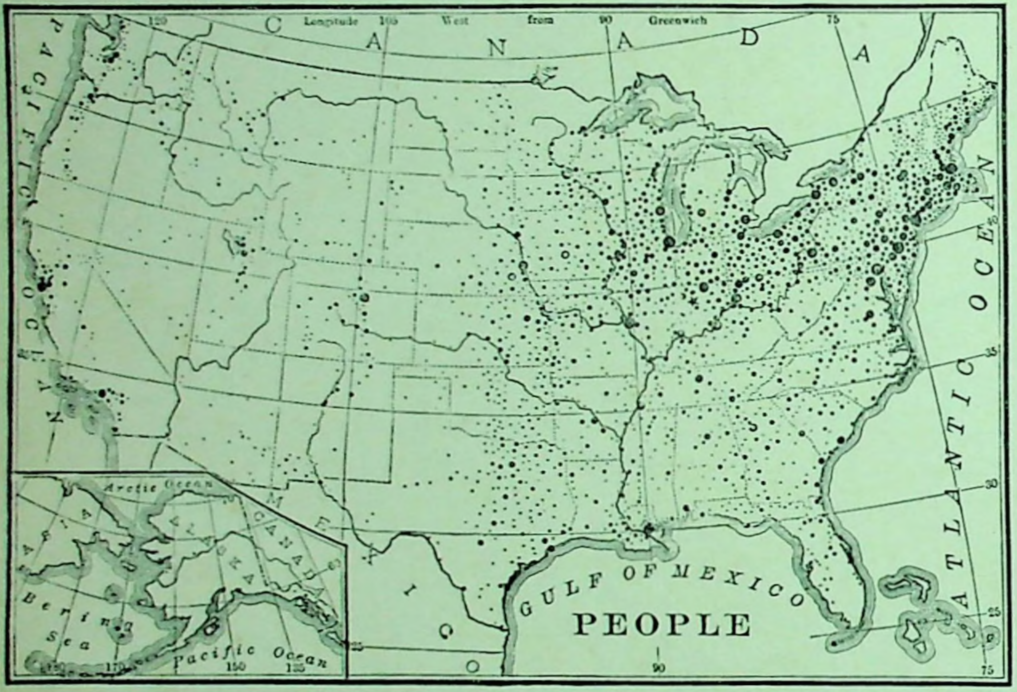
There are also about 70,000 Chinese in this country, mostly in the cities near the Pacific coast.

In 1776 the population of the United States was less than 3,000,000. Now it is more than 101,000,000,[1] or about one twentieth of the total population of the world.

The rapid growth of the country has been largely due to the great number of immigrants who have come from the countries of Europe.

Helps: — Where did French explorers enter the United States? In which part of the country were earliest settlers of Spanish descent?

Where did early English settlers locate? Why did they not at first spread far inland? What change took place in 1776? At close of war for freedom what were limits of the United States? What parts of country were quickly settled after that war? What was origin of some towns and cities?



Note:— The dots on the above map show the location of cities and large towns. The largest cities are indicated by the largest dots. The star on the map shows the center of population according to latest census.

When were Negroes first brought to this country? Where did their labor prove of greatest help to white men? Why? How many Negroes are there in the United States?

How long ago was gold found in Western highland? How did gold seekers reach western gold fields? Name other products of great value there. About how many Indians are there in United States? What does lesson 25 tell about these Indians? About how many Chinese are there in our country, and where are they?

What was population of United States in 1776? About what is it now? From what lands have most immigrants come to this country?

Topics: — Early explorers; where English settlers first made homes, and why; effect of Revolutionary war; limits of country at close of that war; later growth of country; main cause of growth in southern part *(see lesson 33)*; Negroes; how the far West was settled; Indians; Chinese; population in 1776 and now; immigration.

41. Surface of the United States

The United States occupies a wide belt across North America, from ocean to ocean, and therefore contains parts of the Rocky mountain highland, Pacific slope, Central plain, Appalachian highland and Atlantic slope.

Rocky Mountain or Western Highland. The widest part of the Rocky mountain highland is in the United States, about midway between the isthmus of Panama and Bering strait. In this broad portion lofty ranges inclose a vast plateau, about a mile above sea level and several hundred miles wide.

(Continued on page 66.)

Map Studies: — What two countries occupy the greater part of North America? What large bodies of water in part separate these countries? Which has the colder climate, Canada or the United States? *See lesson 21.*

What country adjoins the United States on the southwest? What river flows between these two countries? Into what gulf does this river flow? In what highland does it rise?

Where is Central America? There are several small countries in Central America; between what sea and ocean do they lie?

Locate Greenland; Iceland; Alaska; Newfoundland. Name four islands of the West Indies. Which is the largest? The next in size?

Near what parallel of latitude is the isthmus of Panama?

How far from the equator is the tropic of Cancer? Which country of North America does this tropic cross? Through what gulf does it run? Between what large island and peninsula? Across the end of what peninsula?

On what parallel is the city of New Orleans, in the delta of the Mississippi? At what part of the distance from the equator to the pole is this delta? What large bodies of fresh water are about halfway between the equator and the north pole? What large bay of North America is about as far from the north pole as the gulf of Mexico is from the equator?

At what part of the distance from the equator to the north pole is the southern part of Greenland? Near what circle are Bering strait and Iceland? Name a large river in Alaska that curves northward to the Arctic circle.

In what longitude is New Orleans? *See lesson 18.* At what part of the distance round the earth from Greenwich or London[2] is the delta of the Mississippi?

What three large bodies of water partly surround Alaska? What three oceans border on Canada? Name two oceans, two countries, two rivers, a gulf and a chain of lakes that bound the United States. Into what two gulfs, arms of the Atlantic, do the two rivers flow?

Name a large gulf and sea on the east of Mexico (the peninsula of Yucatan is part of Mexico). What large river flows into the gulf of California? Where does this river rise? The peninsula of Lower California is part of Mexico; what two bodies of water almost surround this peninsula?

What great bay and wide strait are west of Greenland?

Which part of Canada is most mountainous? Which part of the United States? Name three large countries crossed by the Rocky mountain highland. Into what great peninsula in the northwest part of the continent does this highland extend?

In which country is nearly the whole of the Mississippi basin? The Nelson basin? In what country is the basin of the Mackenzie?

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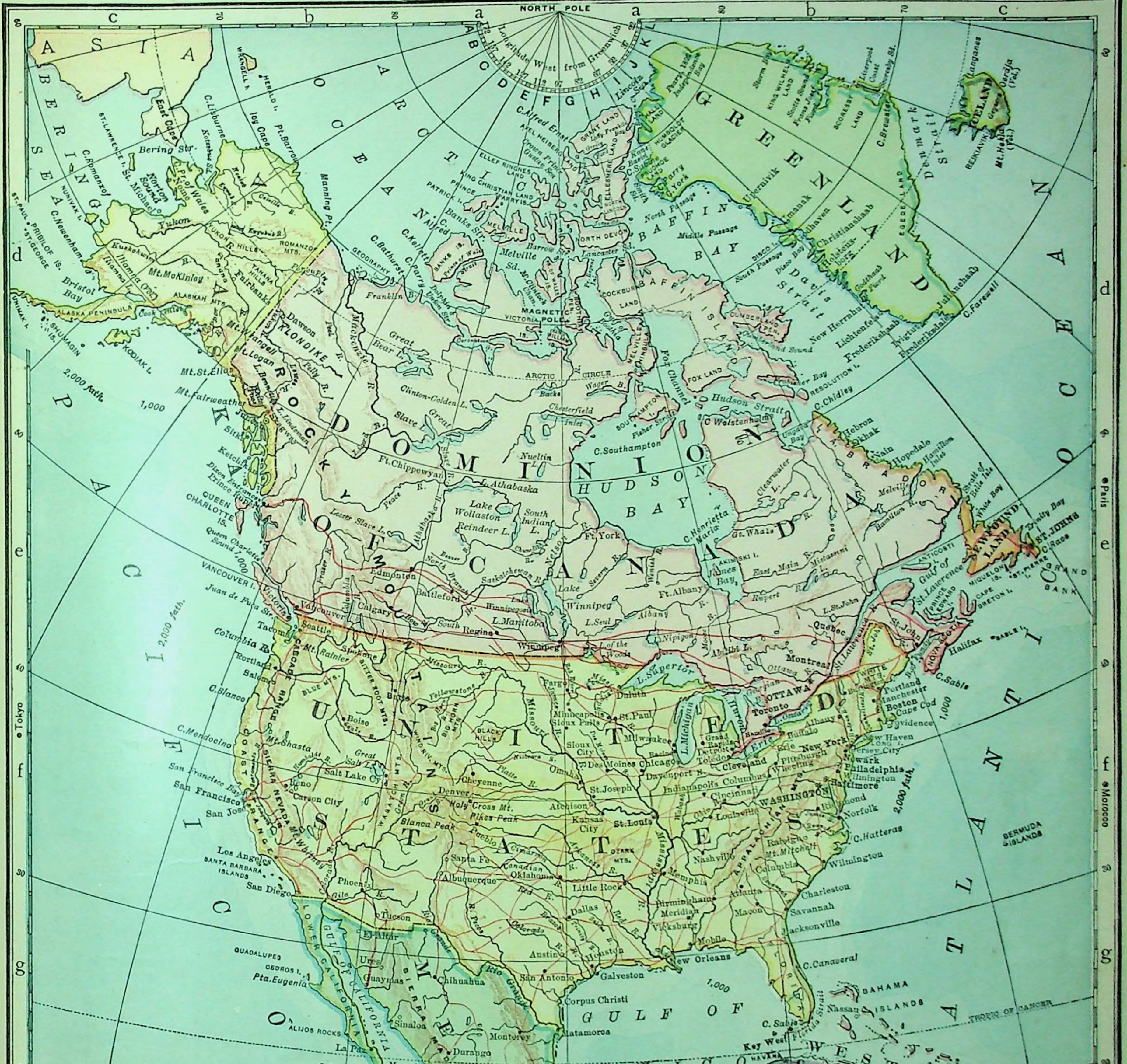
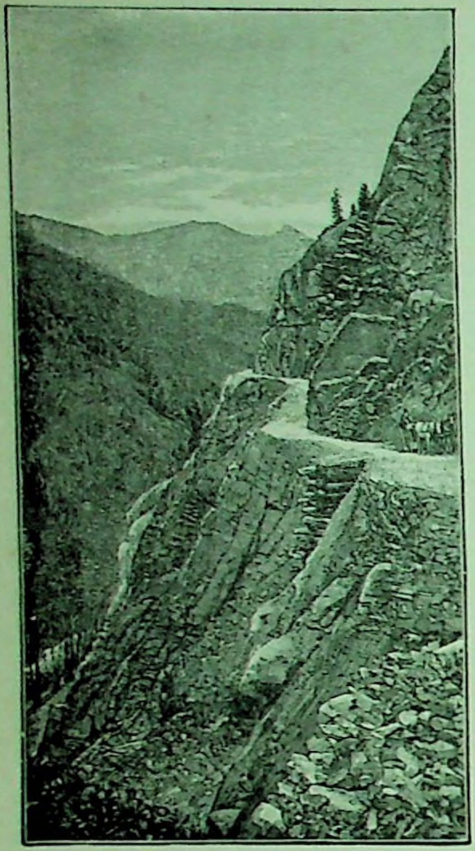
[1] Including Alaska and the island possessions.

[2] Greenwich is a suburb of London, the largest city in the world.



NORTH AMERICA
SCALE OF MILES
0 100 200 400 600 800
Comparative Area
400 MILES
250 MILES
PENNSYLVANIA
45,000 SQ. MILES
THE WHOLE RECTANGLE CONTAINS
100,000 SQ. MILES
NORTH POLE
Longitude West from Greenwich
Longitude West from Greenwich
137
112
97
67
A B C D E F G H I J K L
a b c d e f g h
ASIA
ARCTIC OCEAN
PACIFIC OCEAN
ATLANTIC OCEAN
BERING SEA
GREENLAND
ICELAND
Denmark Strait
BAFFIN BAY
Davis Strait
BAFFIN ISLAND
Hudson Strait
HUDSON BAY
DOMINION OF CANADA
ROCKY MOUNTAINS
ALASKA
LABRADOR
NEWFOUNDLAND
NOVA SCOTIA
UNITED STATES
MEXICO
GULF OF MEXICO
Gulf of Campeche
WEST INDIES
CARIBBEAN SEA
BAHAMA ISLANDS
BERMUDA ISLANDS
CENTRAL AMERICA
SOUTH AMERICA
ARCTIC CIRCLE
TROPIC OF CANCER
Bering Str.
Mt. McKinley
Klondike
Dawson
Mt. St. Elias
Mt. Logan
Mt. Fairweather
Sitka
Juneau
Great Bear L.
Great Slave L.
L. Athabaska
Lake Winnipeg
Edmonton
Calgary
Regina
Winnipeg
Vancouver
Victoria
Quebec
Montreal
OTTAWA
Toronto
Halifax
St. Johns
L. Superior
L. Michigan
L. Huron
L. Erie
Seattle
Tacoma
Portland
Mt. Rainier
Mt. Shasta
San Francisco
Los Angeles
San Diego
Salt Lake City
Denver
Pikes Peak
Santa Fe
Albuquerque
Tucson
St. Paul
Minneapolis
Chicago
Milwaukee
Detroit
Cleveland
Pittsburgh
Buffalo
New York
Boston
Philadelphia
Baltimore
WASHINGTON
Richmond
Norfolk
C. Hatteras
Cincinnati
Louisville
St. Louis
Kansas City
Omaha
Memphis
Nashville
Atlanta
Charleston
Savannah
Jacksonville
Birmingham
Little Rock
Dallas
Houston
Galveston
New Orleans
San Antonio
Austin
C. Canaveral
Key West
Chihuahua
Monterey
Matamoros
Durango
Zacatecas
Tampico
Guadalajara
Guanajuato
MEXICO
Popocatepetl
Vera Cruz
Acapulco
Mazatlan
La Paz
C. San Lucas
LOWER CALIFORNIA
GULF OF CALIFORNIA
Yucatan
Merida
Campeche
Belize
Gulf of Honduras
GUATEMALA
SAN SALVADOR
HONDURAS
TEGUCIGALPA
NICARAGUA
MANAGUA
COSTA RICA
SAN JOSE
PANAMA
HAVANA
JAMAICA
Kingston
HAYTI
PORT AU PRINCE
SANTO DOMINGO
PORTO RICO
San Juan
Tokyo
Paris
Morocco
2,000 fath.
1,000

The various ranges lying along the eastern side of this plateau are known as the *Rocky mountains*. They give their name to the entire highland. The Rocky mountains extend far northward into the basin of the Yukon river, in Alaska, and southward as far as Texas.



Stage road in the Rocky mountains

Among the well-known summits of the Rocky mountains are Pikes peak and Longs peak. These masses of rock may be clearly seen from the plains on the east of the great chain. Many of the Rocky mountain peaks are over two and a half miles high.

These mountains in the United States are in the path of the westerly winds from over the Pacific, but they lie far inland, with other ranges between them and the coast, and therefore do not receive much rainfall.

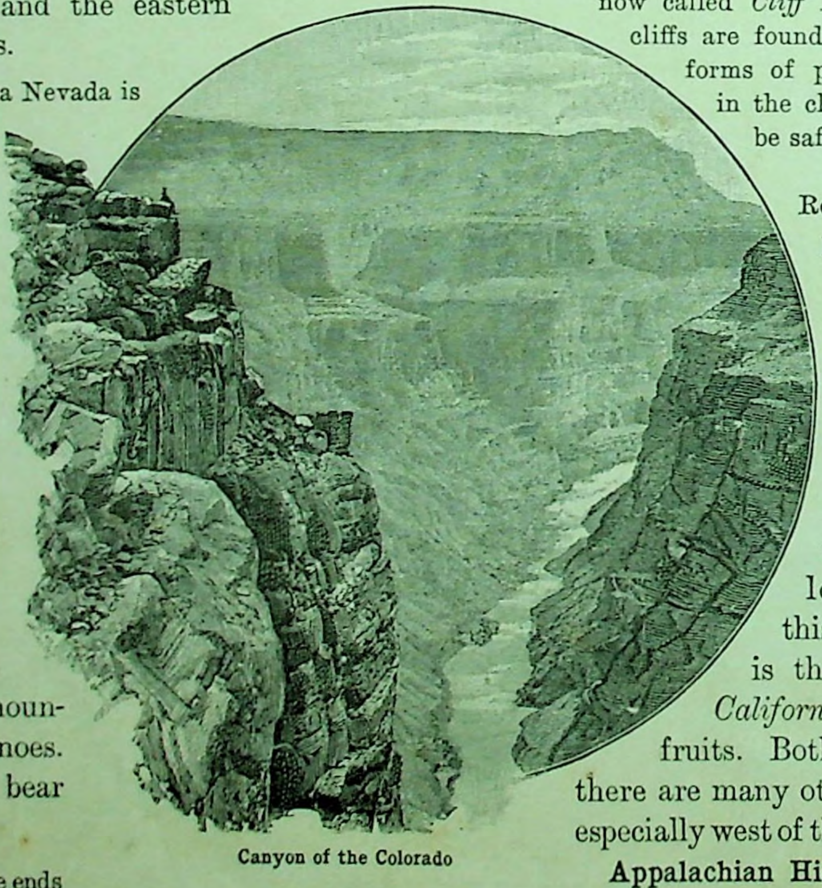
This great mountain system yields large quantities of gold, silver and copper.

The lofty *Sierra Nevada*, meaning *snowy range*, forms a western rim for the great plateau, but there are many lesser ranges between this and the eastern rim in the Rocky mountains.

The highest peak in the Sierra Nevada is Mt. Whitney, near the southern end. It is higher than either of the two peaks named above.

The Sierra Nevada is in the path of the moist westerly winds, with only the low Coast range between it and the sea. The west slope of the Sierra Nevada therefore receives heavy rainfall and has large forests of soft-wood trees, some of which are famous for their great size. This range, like the "Rockies," has rich gold mines.

On the north the Sierra Nevada joins the *Cascade range*, consisting chiefly of mountains of lava or old volcanoes. Some of the high peaks bear glaciers on their sides.



Canyon of the Colorado

Mt. Shasta, rising about where the ends of the two great ranges meet, is a volcanic cone noted for its beauty. Other grand peaks, farther north, are Mt. Hood and Mt. Rainier.

The Cascade range, like the Sierra Nevada, receives heavy rainfall from the westerly winds, and the west slope is densely wooded.

A large part of the plateau region between the Sierra Nevada and the Rocky mountains is an inland basin having no river flowing to the sea. It is known as the *Great Basin*. The rainfall in this basin, east of the high Sierra, is so light that there is not enough water to overflow it. The streams dry up on the plains or enter lakes from which the water evaporates.

How are salt lakes formed? *See lesson 5.*

The streams of the Great Basin form many salt lakes. The largest of these, known as the *Great Salt lake,* is four times as salt as the ocean. A cupful of the lake water contains a tablespoonful of salt. The area of this lake is over 2000 square miles.

In some parts of the basin water is led in canals from the rivers and is used to irrigate the land. It thus becomes possible to raise good crops of grain.

A broad region southeast of the Great Basin consists of high plateaus known as the *Colorado plateaus*. In them the rivers have cut deep canyons. The largest and most famous of these canyons is that which has been worn down by the Colorado river.

For a long distance the canyon of the Colorado is about a mile deep. Its sides consist of rocks of many colors, — gray, brown, red, yellow and purple. At times of sunrise and sunset first one color and then another catches the light or is thrown into shadow, — making a marvelous display.

Ruins of strange dwellings are found in shallow caves under the cliffs in some of the canyons of the Colorado plateau region. The Indians who made these dwellings disappeared before the white men set foot in that country. The people of that ancient race are now called *Cliff Dwellers.* In their homes in the cliffs are found coarsely woven cloth and various forms of pottery. The villages were built in the cliffs in order that the tribes might be safe from attack.

Among the wild animals of the Rocky mountain highland are bears, pumas and Rocky mountain sheep, or bighorns. A few bison or buffaloes also are found there. In the far north, where this highland enters Alaska, are found many caribou, or American reindeer.

Pacific Slope. Close to the shore of the Pacific lie several mountain ridges, forming a low *Coast range*. Between this range and the Sierra Nevada is the long and narrow *valley of California*, famous for its wheat and fruits. Both north and south of this valley there are many other smaller but fertile valleys, especially west of the Cascade mountains in Oregon.

Appalachian Highland. East of the Rocky mountains spreads the great Central plain; along its east side rises the Appalachian highland.

Most of the ranges of this highland are long ridges. Some still show the arching layers of rock, like those in the middle picture on page 9. Many more were formed in this way, but have been greatly changed by rain and streams.

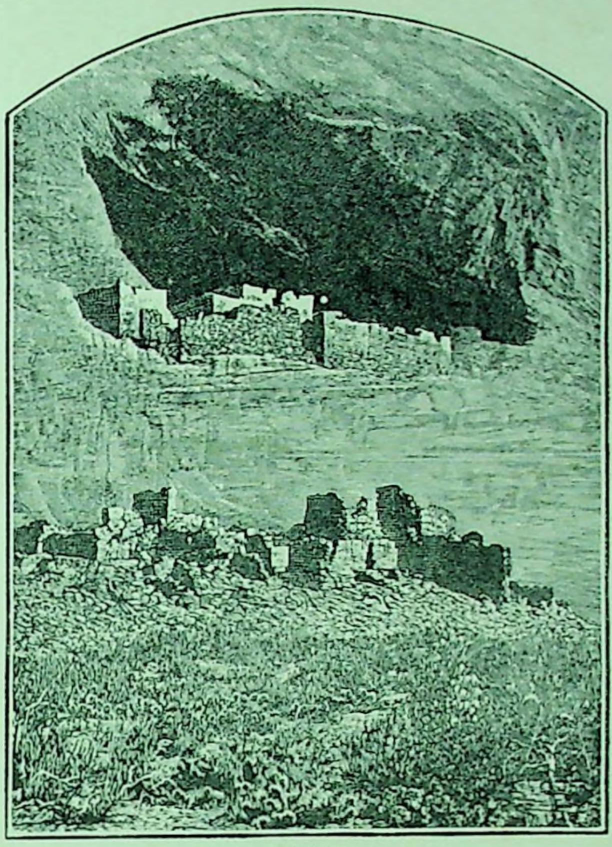
Not far from the northeast end of this highland stands a group of peaks known as the *White mountains,* noted for the beauty of their scenery.

Mt. Washington, one of these peaks, is the highest mountain in the northeast part of the United States; it is a little less than a mile and a quarter high.

West of the White mountains are the low ridges of the *Green mountains;* and still farther west, across lake Champlain, are the *Adirondacks.*

Can you find in your history the story of Ethan Allen and his "Green mountain boys"?

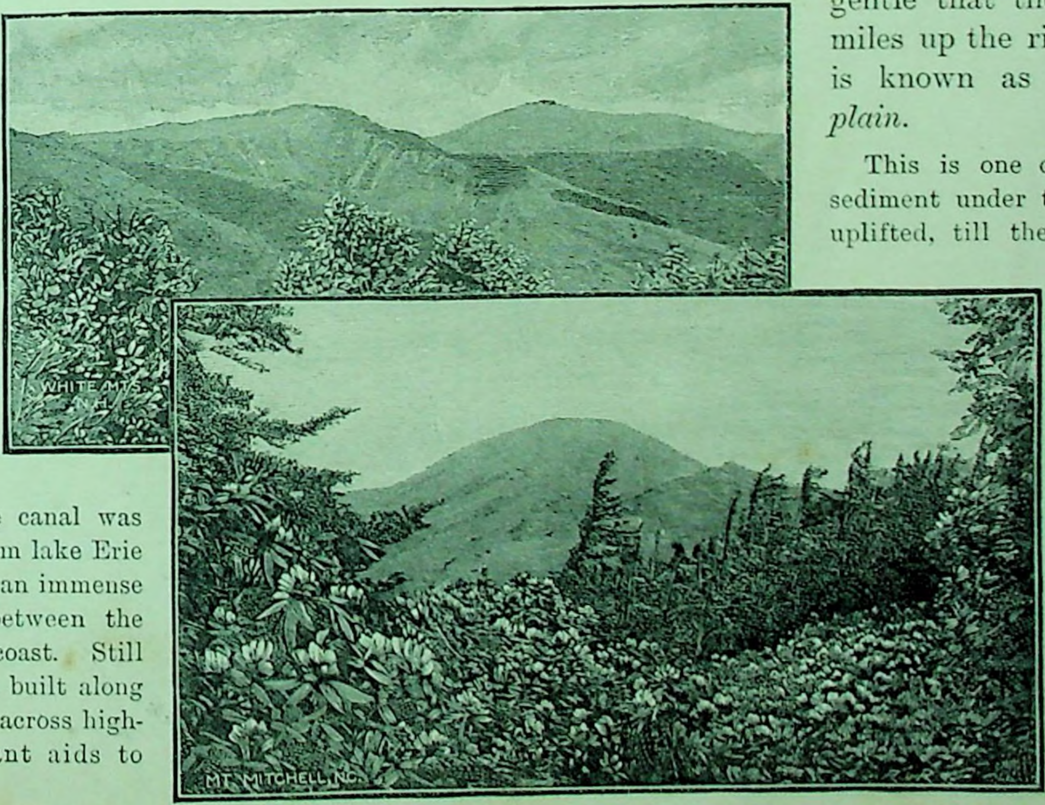
The Adirondacks are mountains that for very long ages have been worn down by rains and streams and, as in other regions of the same kind, layers that were once deeply buried and that contain rich deposits of iron ore are now near the surface.



Home of Cliff Dwellers

The three groups of mountains above named are cut off from the rest of the Appalachian highland by a valley in which flows the river Hudson and its branch, the Mohawk. This valley extends all the way across the highland and forms a highway of trade between the Great Lakes and the Atlantic coast.

In early times warlike tribes of Indians held the Mohawk valley and for many years did not allow the colonists to make this a route of trade or a highway for reaching the fertile prairie region farther inland. Later, the Erie canal was built along the valley, from lake Erie to the Hudson river, and an immense trade was carried on between the lake region and the seacoast. Still later, railroad lines were built along the same route. Valleys across highlands are very important aids to commerce.


WHITE MTS.
MT. MITCHELL, N.C.

For some distance southwest of the Hudson river the Appalachian highland is not so high as the White mountains or the Adirondacks; then it rises farther south in the *Blue ridge* and attains its greatest height in Mt. Mitchell, one of the *Black mountains,* a little higher than Mt. Washington.

Among the ridges of the Appalachians lie long fertile valleys. This whole region receives plentiful rainfall, and most of the ranges or ridges are covered with forests. Some of the ridges are very rich in iron ore and coal.

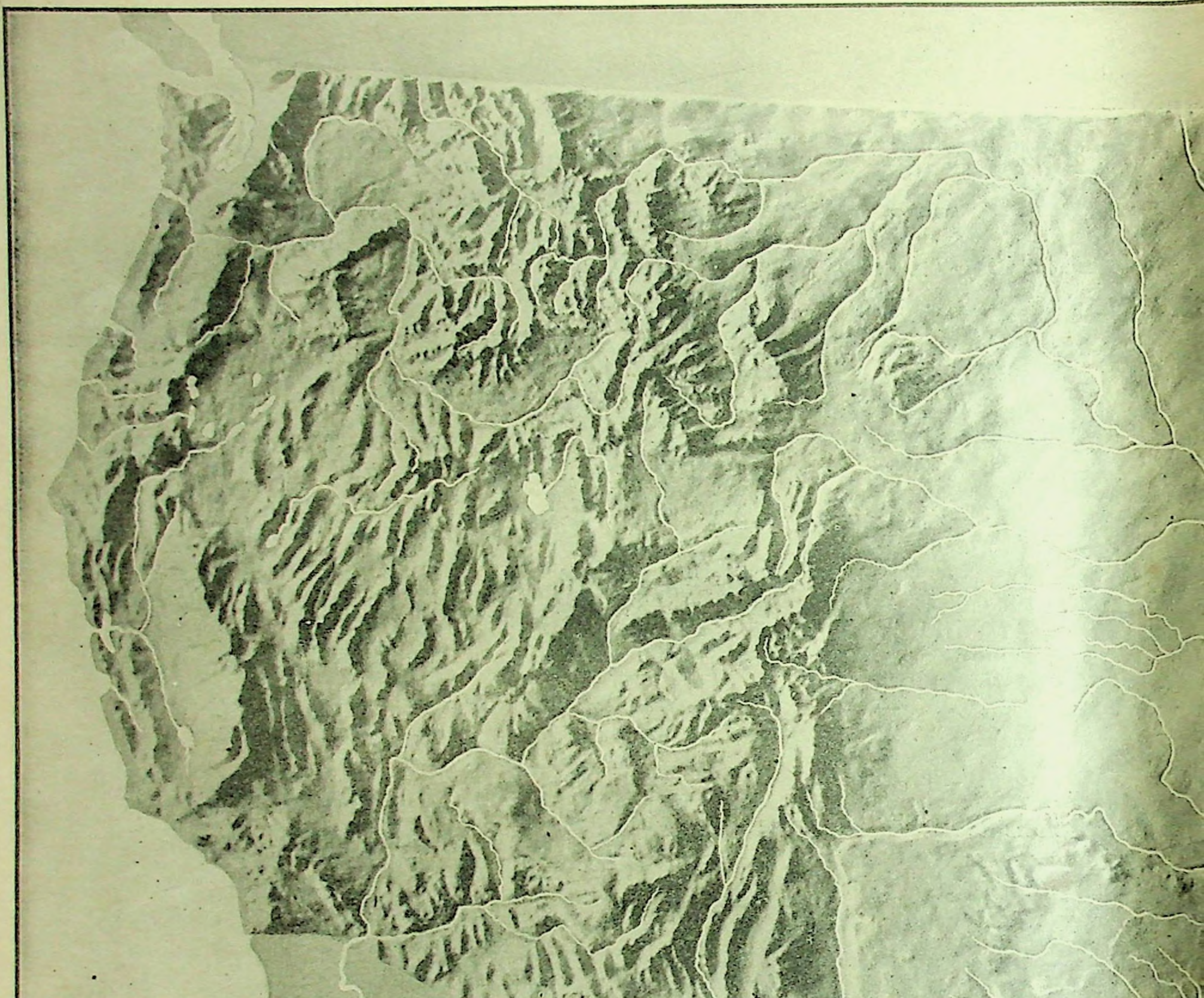
Along the western side of the Appalachian highland lie broad plateaus that are deeply cut by rivers, and have a general slope towards the Mississippi river. The general name of this plateau region is the *Allegheny plateau,* but some rugged parts are called *mountains,* as the Cumberland mountains in the southern part. This plateau is rich in iron ore and coal.

Deer are found in the forests of the Appalachian highland. The moose, the largest of the deer family, is often seen in the forests in the extreme northeast part of our country.

Coastal Plain. Beginning at the mouth of the Hudson river, and reaching all along the Atlantic coast to Florida, a wide slope descends from the Appalachian highland to the seacoast. The part of this slope near the highland is rough foothill land, but nearer the coast the grade is so gentle that the tides are felt many miles up the rivers. This level part is known as the *Atlantic coastal plain.*

This is one of the plains formed of sediment under the sea and then slowly uplifted, till the sea-bottom became dry land. *See lesson 6.* It is made of layers of clay, of sand, of gravel and fine soil, washed into the sea ages ago by the rivers and then slowly uplifted to form dry plains.

Another part of the same great coastal plain stretches far inland from the shore of the gulf of Mexico and extends from Florida to the Rio Grande and beyond. This part is known as the *Gulf coastal plain.*



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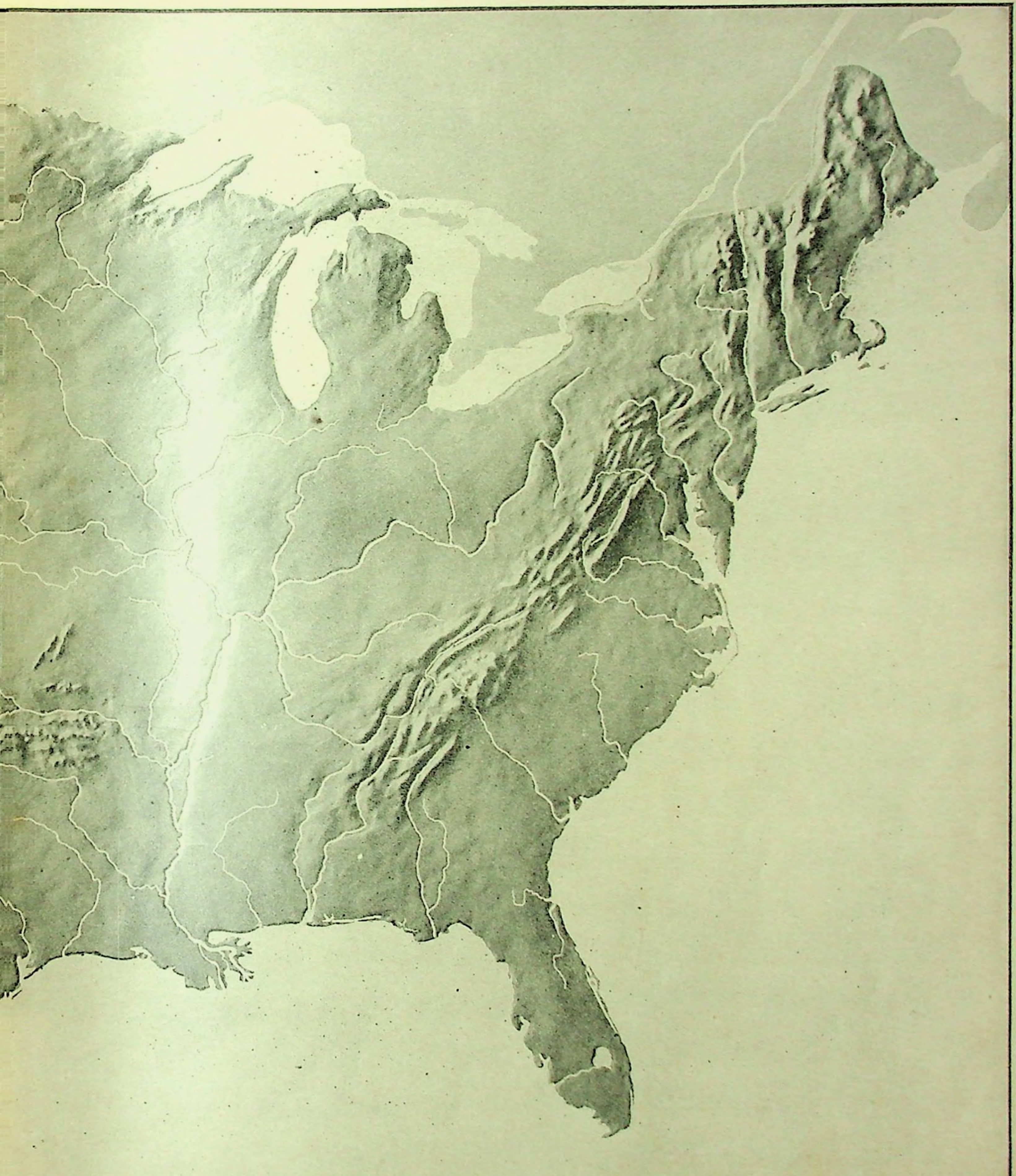
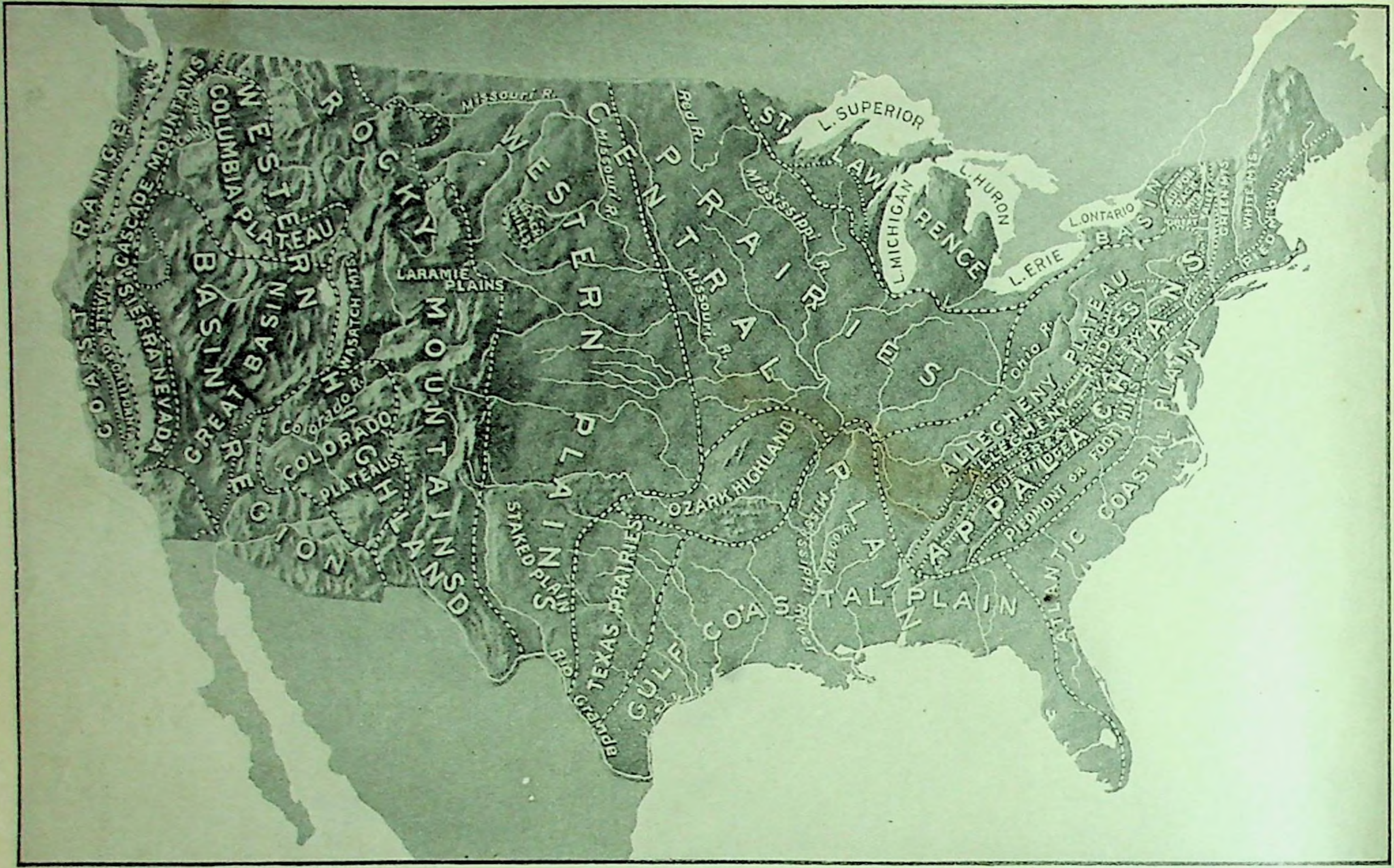
RELIEF MAP OF THE



UNITED STATES



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Key to relief map on pages 68 and 69; and colored map on pages 72 and 73

Map Studies of States[1]: — The United States consists of forty-eight states, two territories, various island possessions and the District of Columbia. The city of Washington, the capital of the United States, is in this district.

The states and territories differ in their form of government, as we shall see in lesson 83. The territories are Alaska and Hawaii. With the exception of Alaska, all the divisions of our country on the map on pages 72–73 are states.

Begin with Maine and name in order the states bordering on the Atlantic. In which state are the White mountains? The Green mountains? The Adirondacks? In which state is the valley of the Mohawk and Hudson rivers? Of which does the peninsula of Cape Cod form a part? Which is north of Long island?

Which two states are separated by Delaware bay? Into which two states does Chesapeake bay enter? Across which state does the Blue ridge extend? In which state is the highest part of the Appalachian highland? Between which two states does the Savannah river flow? Which state lies nearest Cuba?

Name the states that border on the gulf of Mexico. Into which of these does Mobile bay enter? In which is the delta of the Mississippi? Which two Gulf states are separated in part by the Mississippi river? Which is separated from Mexico by the Rio Grande?

The banks of rivers are named *right bank* and *left bank*, looking *downstream*; name the states on the west or right bank of the Mississippi river; along the left bank. Name the states along the north or right bank of the Ohio river; along the south bank.

Which states border on lake Erie? On lake Michigan? On lake Superior? Which of the Great Lakes partly bound the state of Michigan? Beginning with New York, name the states along the Great Lakes.

West of the Mississippi river the states are in rows or tiers from north to south. First there comes the row of states along the west bank of the Mississippi river, and you have already learned to name them. Next west is the row whose eastern parts are in the fertile prairies, but whose western parts are in the dry Western plains; name them, beginning with North Dakota. What state is north of Texas?

Farther west lies the Rocky mountain tier, consisting of four large states; name them. Between the Rocky mountains and the Sierra Nevada and Cascade ranges are four large and high states of the basin or plateau region, two of the states lying side by side in the Great Basin; name them.

Name the three states that border on the Pacific. Where is the territory of Alaska? *See map on page 65.*

What great river flows across the two Dakotas? What state is crossed by the lower part of this river? By the upper part? What states are crossed by the Colorado river and the Rio Grande? In which state is Pikes peak?

In which state is Great Salt lake? In which state is the Humboldt river? Into what does it flow? To what state would you go to see the Grand canyon of the Colorado river?

In which state is nearly all of the Sierra Nevada? Name a volcanic peak near the northern end of this chain. Across what two states does the Cascade range extend? In which state is Mt. Hood? Mt. Rainier? Where is Puget sound?

Between what two states does the lower part of the Columbia river flow? What great branch does this river receive from the southeast? Between what states does the Snake river flow?

Bound the state in which you live.

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[1] See large map on pages 72–73; also map above. Complete the study through lesson 41, before taking these *map studies*.

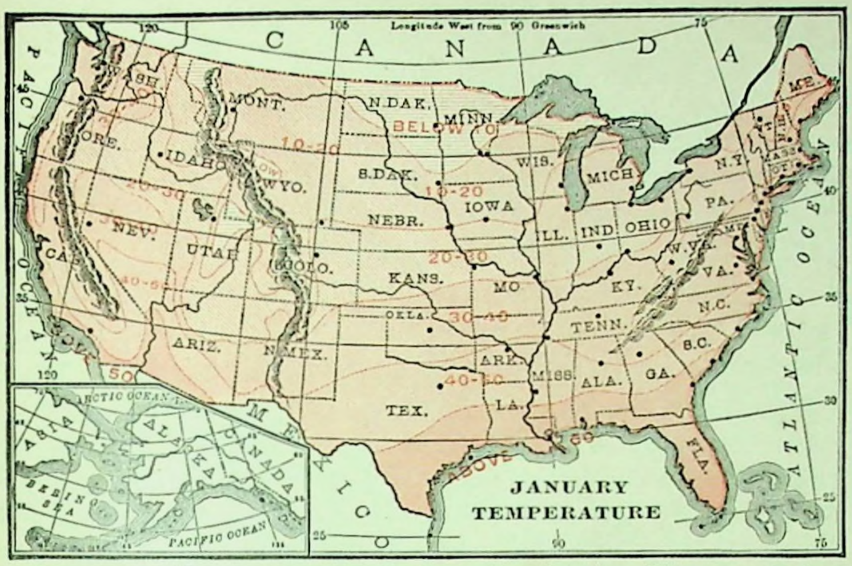


CHART A: — The greatest cold is in the northern interior. The warmer regions are the southern boundary and the southeastern coast. The northeastern coast is much colder than the northwestern.

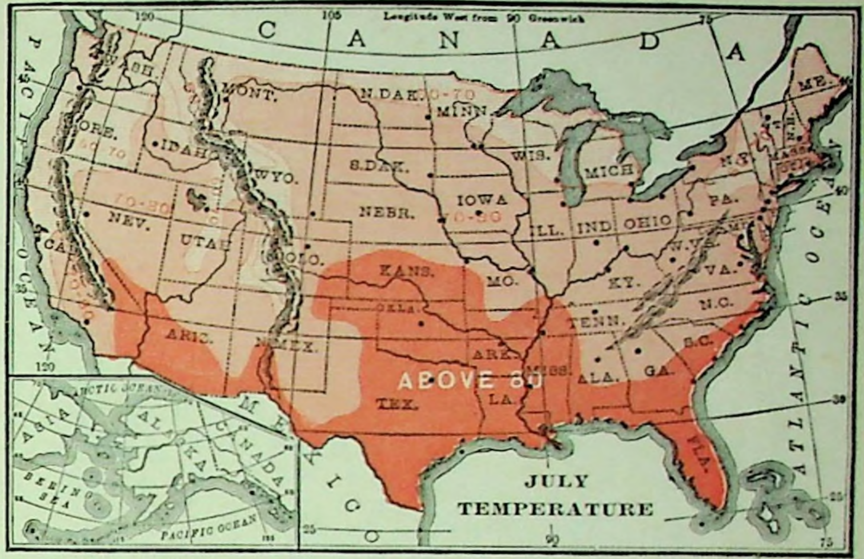


CHART B: — The greatest heat reaches northward in the middle of the country. The cooler regions are along the northern boundary, on the mountains, and along the western coast.

Over the eastern half of the United States there is plenty of rain. The rainfall is least along the border of the dry Western plains, and thence increases to over fifty inches towards the sea on the east and south. The rainfall in the east is heaviest where the moist winds from over the gulf of Mexico blow over on the Southern plain and the southern Appalachians.

One great advantage in the climate of the eastern half of the country is the even distribution of its rainfall throughout the year. There is no long dry season, and drouths are seldom long enough to cause great loss. Even far inland, where the rainfall is least, more than half the rain falls in the warm season, when it is most needed by the growing crops of corn and wheat.

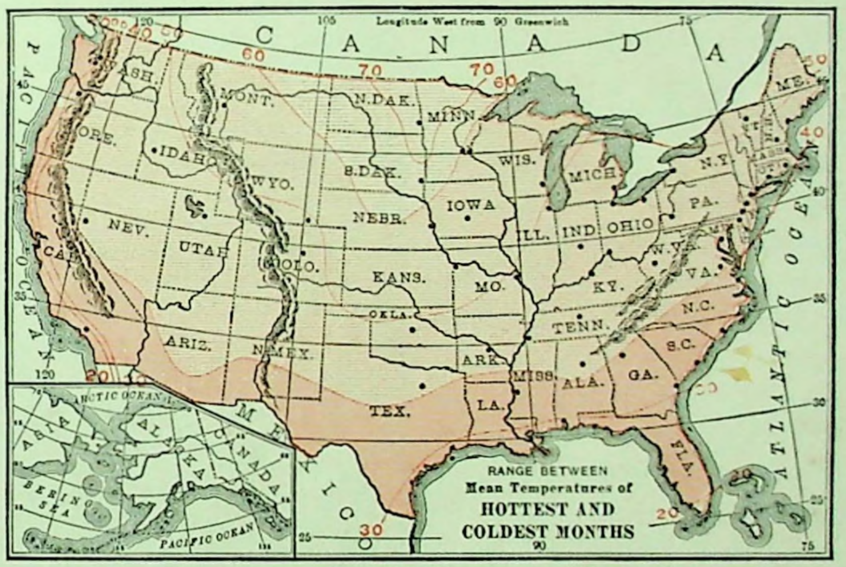


CHART E: — The above map shows that the greatest difference between January and July temperature is found on the northern part of the prairies and Western plains. There is less difference along the southern boundary and western coast.

Helps: — What effect has gulf of Mexico on climate of United States? What effect has Gulf stream? Northeast polar current? Describe effect of Pacific ocean on climate of United States.

Explain change in winds blowing across continent in winter; in summer. Compare temperatures of coast lands and regions far inland.

What is said about general rainfall of United States? What winds bring rains to Pacific coast? What winds bring heaviest rains in eastern part? Which parts have scanty rains?

Topics: — United States in heat belts; effect of shore waters on climate of country; westerly winds and climate of Pacific coast; winds crossing continent; inland and coast climate; rainfall along west coast; rainfall of western interior; eastern half of country; heaviest rainfall; distribution of rainfall throughout year.

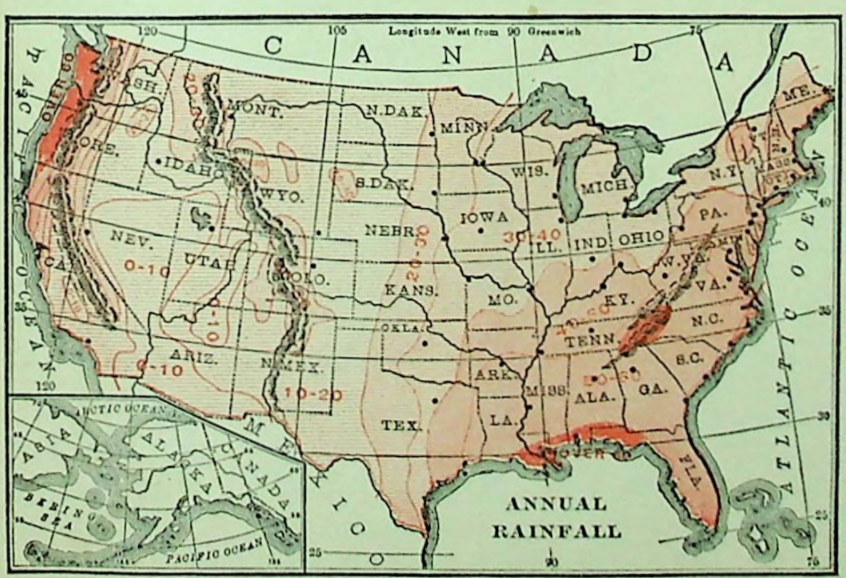


CHART C: — The regions of heaviest rainfall are in the eastern half of our country (in the states along the northern shore of the gulf of Mexico and round the southern end of the Appalachians) and near the northwestern coast. The mountains have more rainfall than the lower lands in the same region.

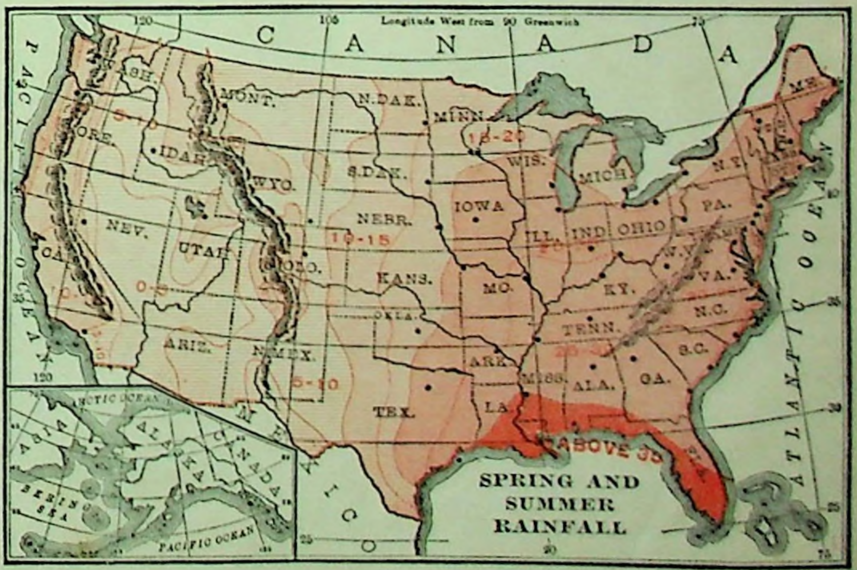
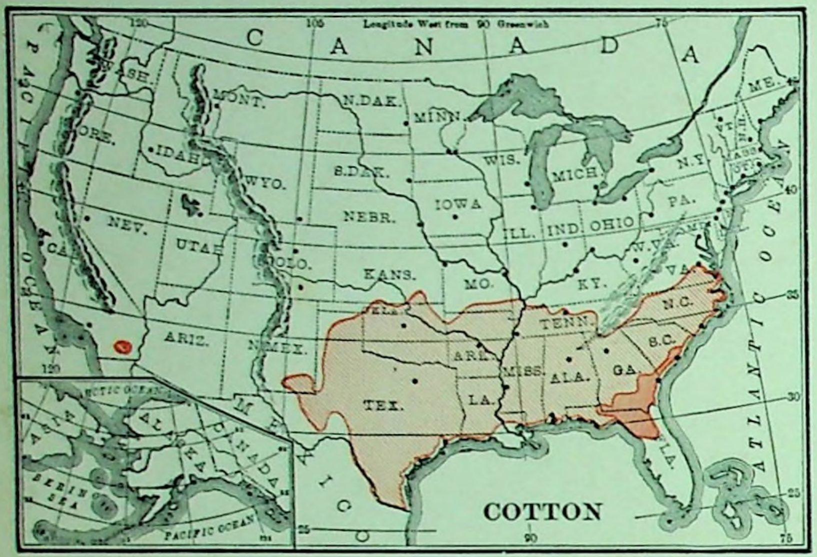


CHART D: — The general distribution of rainfall for these seasons is the same as that for the year; but the northwestern coast has less than half its total rainfall during these seasons, while the southeastern coast and much of the Mississippi valley have more than half.

PRODUCTS OF THE UNITED STATES

43. Cotton

Study the cotton map and name the Atlantic states that produce cotton; the Gulf states; name three states having no seacoast, that have very rich cotton lands, as shown by the darker tint on the map.



In which heat belt are the cotton states? *See lesson 20.* What are the seasons of this cotton belt? *See lesson 21.*

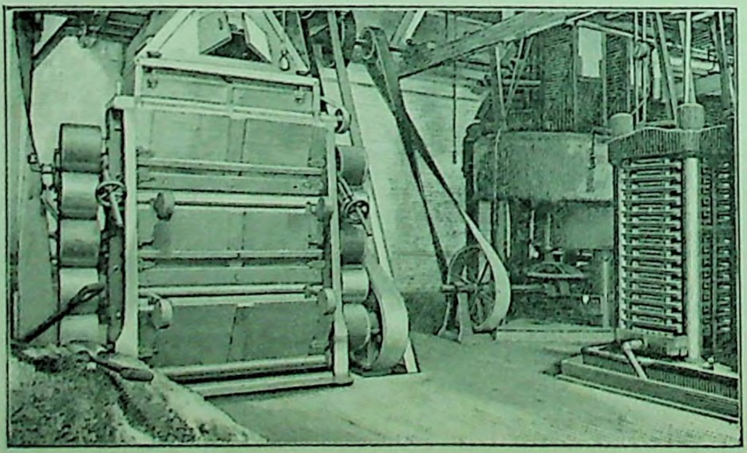
What does lesson 42 tell about the climate of the cotton belt, — both the coastal plain and the foothill region?

Review lesson 33 and tell how the fiber of cotton is separated from the seed; what use is made of the fiber and the seed; to what extent cotton cloth is used in the world. Lesson 33 tells more about the use of cotton seed.

In order to ripen its seeds and thus produce long and soft fibers, the cotton plant requires a very long warm season. For this reason it thrives only in the warm or hot belts of the earth. It also needs plentiful rains.

The leading cotton regions of the world are the Southern states, the rich plains of India, the fertile plains along the lower part of the river Nile and in its delta, and Central Asia.

Texas produces more cotton than any other state. Georgia ranks next highest. The best grade of cotton formerly grew on the islands that lie along the coast of Georgia and of South Carolina. This is known as *Sea-island* cotton. Nearly all the cotton of this kind is now raised on the mainland in southern Georgia and northern Florida, as well as in South Carolina. Some of it is sent to foreign lands to be woven into fine cloth.


Machinery in a cotton-seed mill

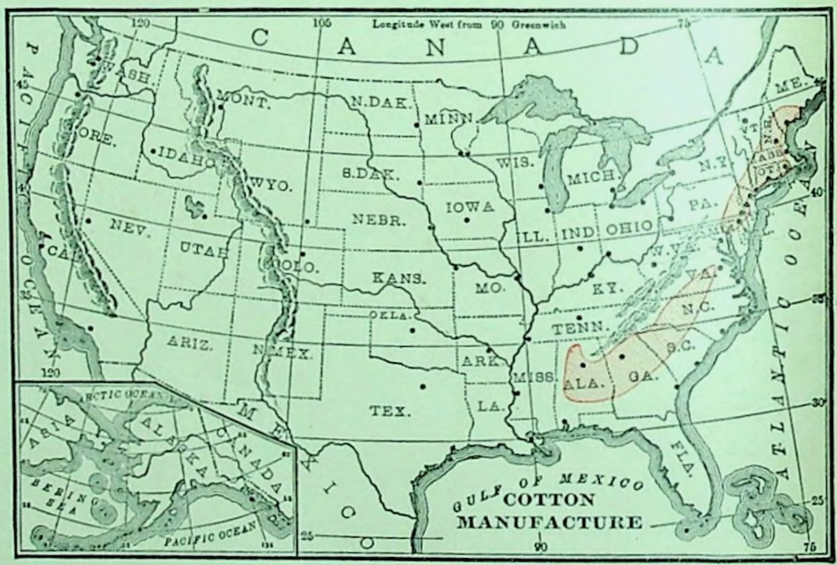
Much of the Texas cotton is shipped from Galveston; a large part of the Sea-island cotton, as well as of the other grades of cotton raised farther inland, is shipped from Savannah. The cotton states along the Mississippi and its branches send great quantities of the fiber to New Orleans, where it is placed on ocean steamers and sent to foreign countries or to some of the manufacturing cities of the North. Large quantities of cotton are sent by rail to the great eastern seaports and thence by steamships to Europe. Galveston, New Orleans and Savannah are the chief cities in exporting this useful fiber. Charleston, Wilmington and Norfolk, as well as other Atlantic seaports, have a large trade in cotton.

Cotton cloth is made in many states, but most of the cotton mills of our country are in the northeastern part and in the South. (*See tinted areas on the map.*)

Strong water power from swift streams gave the northeastern states of the Union an early start in manufacturing. Steam and electricity have now largely taken the place of water power, but hundreds of mills with their skilled workmen and costly machinery still hold a very large part of the cloth-making industry to this district, although the raw cotton must be carried far from the fields to the looms.

The cloth-making industry in the cotton states is not so old as in the North, but its growth has been very rapid. The people of the South have rapidly gained skill in the use of the best modern cotton machinery, and are showing much energy in making fine grades of cloth. Most of the cotton mills of the South are in North and South Carolina, Georgia and Alabama.

Massachusetts leads all other states in the manufacture of cotton goods. The Carolinas and Georgia are next in rank.

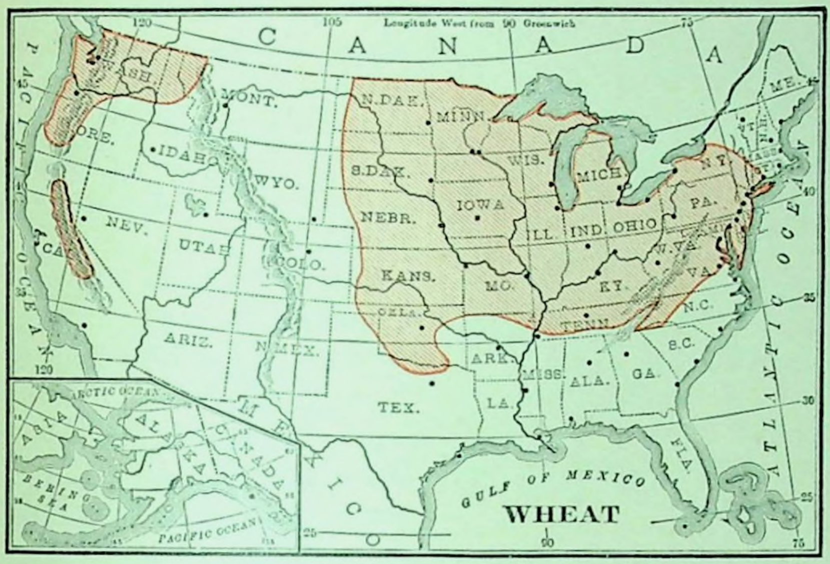


New York and Boston handle much of the raw cotton used in the mills of the northeast.

The United States ranks first in the production and export of cotton. More than a third of the crop is used in the mills of this country; the remainder of the immense crop of raw cotton is sent each year to foreign lands. A large portion of this goes to the British Isles, and the rest chiefly to the great cloth mills of other countries of Europe. These foreign countries also import great quantities of raw cotton from India and the Nile valley.

The United States leads in the manufacture of cotton cloth. Great Britain is second. Other European countries have many cotton mills. Our country imports fine grades of cotton cloth from some of the countries of Europe.

Topics: — States of cotton belt; climate; work of cotton gin; uses of cotton; world's chief cotton regions; states producing most cotton; Sea-island cotton; New England; cities famous for cloth weaving; rank of United States as cotton country; what becomes of cotton crop; other regions sending raw cotton to Europe; rank of countries making cotton cloth.



44. Wheat

What does lesson 34 tell about wheat?

The prairies are the principal wheat region of this country. Smaller quantities are raised also in the Middle Atlantic states, in the valley of California and other Pacific valleys farther north, and in Texas.

Wheat thrives best in the cool belt, but is raised in some parts of the warm belt. It is a more hardy grain than corn, not being so easily killed by frost or cold weather. One of the best wheat regions is in the cooler prairies of Minnesota and the Dakotas, and even much farther north in Canada.

A large part of this region, in the valley of the Red river, is the bed of an ancient lake, and therefore has fine rich soil.

The richest part of the wheat belt lies between the Great Lakes on the north, and the Ohio and Missouri rivers on the south and west; but there are fertile wheat fields still farther south and west, as shown by the map.

We have seen that the rapid growth of the South was very largely due to the invention of the cotton gin. The rapid growth of the prairie states was due fully as much to the invention of machines for reaping and binding grain.

The city of Minneapolis has the largest flour mills in the world. Among American cities St. Louis ranks high in making flour. Along the waterway of the Great Lakes, the New York Barge canal and the Hudson river, from Chicago to New York, every large city has extensive flour mills.

Chicago and the other lake ports handle thousands of shiploads of wheat each year. Much wheat is carried to New York, Baltimore, Philadelphia, New Orleans and Galveston, where it is loaded on ships bound chiefly for Europe.

Much of the wheat crop of the Pacific coast states, either in the form of grain or made into flour, passes through Portland and ports on Puget sound, on the way to the Orient.

The United States leads all other countries of the world in the production of this important cereal. Russia, India, Canada and France also produce very large crops.

Wheat and flour are exported from the United States in large quantities. Like cotton and corn, they find a foreign market chiefly in the British Isles and other countries of Europe.

Topics: — Wheat regions; Red river valley; Great Lakes region; Pacific regions; cities having flour mills; lake ports and seaports; countries producing most wheat; export value of wheat and flour; to what countries wheat and flour are exported.

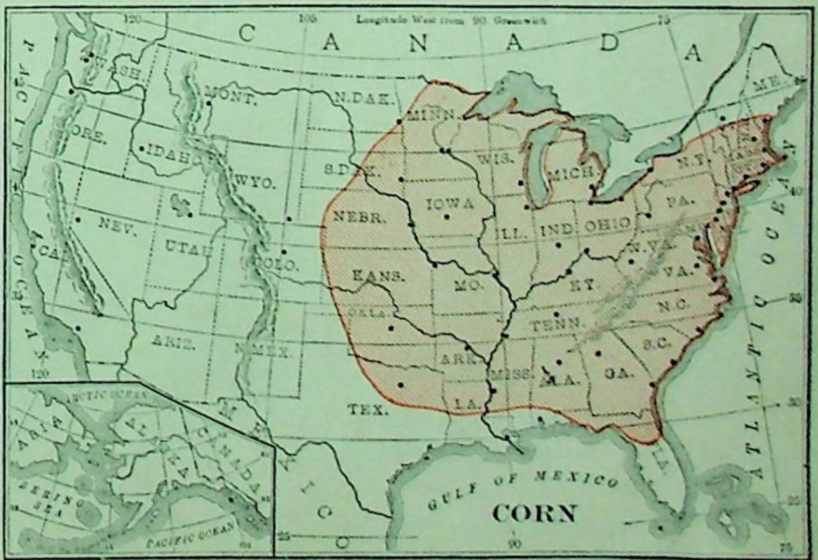
45. Corn

Review what lesson 34 tells about corn.

Corn is widespread over the eastern half of our country, except in the marshy or sandy lands along the gulf of Mexico, and in the extreme north where early frosts are common or where there are dense forests. The best region for the growth of corn is in the southern half of the prairies. This corn belt stretches east and west, passing between the cities of Chicago and St. Louis. It reaches the border of the Allegheny plateau on the east and the great plains on the west.

Describe the seasons in this corn belt. What winds bring most of the rainfall to the region?

Great quantities of corn are used to fatten live stock, especially hogs and cattle. There is more live stock in the corn belt than in any other part of the United States.



Chicago and the other large lake and river ports serve as centers for the collection and distribution of corn. New York, Baltimore and other great eastern seaports carry on a large foreign trade in this grain.

The United States exports only a small part of her corn product. These exports are sent principally to Great

Britain and other European countries, to help feed the millions of people in their workshops.

When the early white settlers came to America they found here a new kind of grain raised by the Indians. To these white men the word *corn* was a general term meaning *grain*. They gave the new grain the name of *Indian corn*. Since that time this valuable grain has spread to nearly all fertile lands having long and hot summer weather.

How did the Indians prepare the forest lands for cornfields? *See lesson 25.* Why was it necessary to kill the trees?

Topics: — Corn area of United States; climate of corn area; corn ports; export of corn from this country; foreign customers; origin of name Indian corn.

Logging in the "Yazoo delta" of the Mississippi flood plain

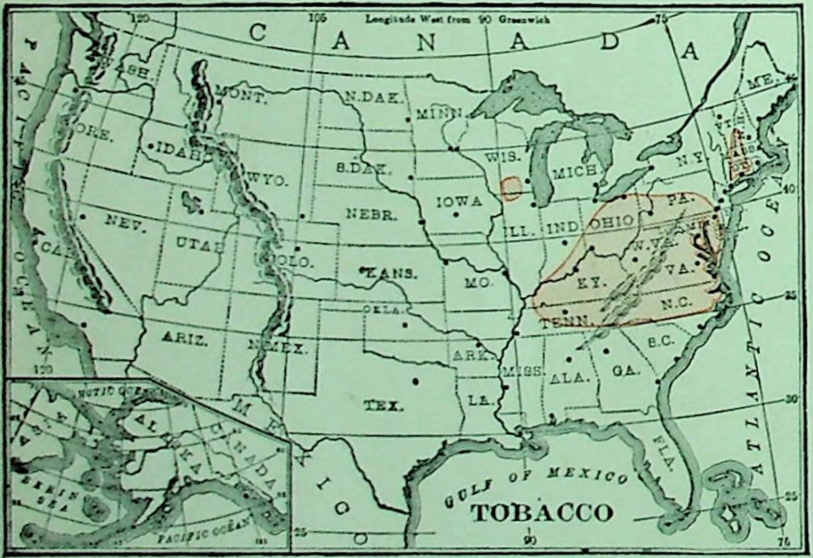
46. Oats, Barley and Rye

Reading Lesson

Oats are not native to America and have not been so widely sown in our country as corn or wheat. In recent years, however, the United States has taken the first rank in raising oats.

Oats are much hardier than corn, often growing in a poorer soil and a colder climate, but thriving also in the fertile prairies and still farther south in the coastal plains. In the United States, as well as in other parts of the world, the oat crops are largest in about the same districts that produce the most wheat and corn. Nearly all the oats exported from our country are sent to Europe.

Barley and rye are hardy grains, but they do not take a leading place among the cereal crops of the United States. Rye is an important food product in Russia, Germany and other parts of Europe.



47. Tobacco

What does lesson 33 tell about tobacco?

The chief tobacco districts in the United States are the Ohio river valley; the foothill slopes east of the Blue ridge in Virginia and the middle part of the Carolinas; the district crossing from lake Ontario to Chesapeake bay; and the Connecticut river valley.

Louisville is a famous tobacco market. New York, St. Louis and Richmond are great manufacturing centers for tobacco goods. Key West and Tampa, in Florida, make many cigars from Cuban tobacco.

The United States raises more tobacco than any other country. India, central Europe, Russia and both the East and the West Indies supply large quantities of tobacco. The Cuban tobacco is said to be the best in the world. It grows chiefly in the lowlands of the western part of the island.

Our country has a large export trade in *leaf tobacco*. Immense quantities are sent through the ports of New York, Baltimore and New Orleans to the manufacturing countries of western Europe.

Topics: — Tobacco plant; curing; tobacco districts; cities noted for tobacco; countries noted for tobacco; export trade.

48. Forests

What does lesson 33 tell about the yellow pine forests of the Southern states? Explain what is meant by naval stores and tell how some kinds are made.

What does lesson 34 tell about the soft-wood forests round the Great Lakes? Explain the work of lumbering in the forests of this region.

Only a few trees grow wild on the Western plains or in the Great Basin of our country, because the rainfall there is so light.

Large areas in the prairies are treeless, but trees grow in the lowlands along the rivers and many have been planted wherever the land is settled.

The soil in most parts of the prairies is very fine and compact. Such soil is not so well suited to forests as the looser soil of highlands or of moist sandy plains. Fine dark soil, like that of the prairies, is found in the treeless plains of southern Russia.

The eastern half of our country, except portions of the prairies, is quite heavily wooded and yields lumber of many kinds. The forests around the upper three of the Great Lakes consist mostly of pine, spruce, hemlock, ash and maple, but other kinds of trees also abound there.

Many streams from this forest region unite and flow past Minneapolis, and that city has grown to be a great lumber market, both for hard woods and soft woods.

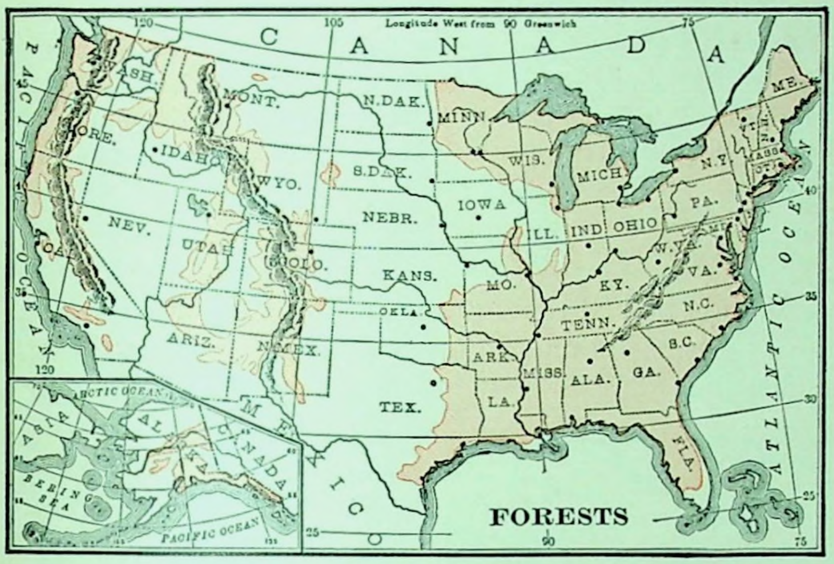
Each year hundreds of thousands of barrels are made in Minneapolis, to hold the flour which the mills there produce. Several branch streams enter the Mississippi below this city and float logs down to the mills in many other river ports.

Numerous sawmills are located on the small logging rivers which flow from the forests into the Great Lakes. These mills supply lumber to the ports on the lakes.

Chicago is one of the leading lumber markets of the world.

This city is within easy reach of the lake forests and is also a great railroad center. Thus it can supply lumber for buildings in many towns and cities of the almost treeless prairie region.

Many cities in the Lake region manufacture furniture. Among these Chicago and Grand Rapids rank highest.



The forests of the Appalachian highland contain both soft-wood and hard-wood trees. Forests of hard-wood trees abound in the states of the Ohio basin and farther south. New York and all other large cities in or near this forest area manufacture furniture.

The hard-wood forests in the states which border on the Great Lakes, and the nearness of mines of iron ore and coal, have given this region the lead in the manufacture of agricultural implements, carriages and wagons. The need of these articles in such a rich farming section has also greatly stimulated their manufacture.

Michigan logs at World's Fair, Chicago

The soft-wood forest belt extends eastward across New York and New England. This eastern portion was long famous for its lumber, but most of the valuable pines have been cut down. At present large numbers of the soft-wood trees are being ground to pulp and made into paper.

Great forests of hard-wood and soft-wood trees cover a large portion of the Atlantic and Gulf slopes, from the Hudson river to eastern Texas. Here is found the long-leaf pine, one of the most valuable trees on the continent. Immense quantities of lumber are sawed from the trunks of the long-leaf pine in the Southern states, and its sap is made into turpentine, tar and rosin, which are known as naval stores. Savannah exports more naval stores than any other city in the world. Nearly all the seaports of the South export lumber. Most of the large Southern cities have furniture factories.

The western slopes of the Sierra Nevada and Cascade mountains are heavily timbered with soft-wood trees. The sawing of lumber is an important industry in many cities of the Pacific coast. Along the shores of Puget sound are found some of the largest sawmills in the world. One of the principal trees of the Cascade slopes is the Douglas fir, also called the *Oregon pine*. Redwood is one of the most valuable trees of the Coast range.

The United States produces more lumber and manufactures more woodenware and naval stores than any other country in the world.

Topics: — Western plains and Basin region; prairies; eastern half of United States; region of Great Lakes; Minneapolis; Chicago; Grand Rapids; agricultural implements and wagons; Appalachian highland; forests of New England and New York; Atlantic and Gulf slopes; naval stores; Savannah; Pacific slopes; Puget sound; rank of United States in forest products.

49. Fruits

The United States is bountifully supplied with fruits. Some of them are widespread in their growth, but others are confined to small areas. Such fruits as apples, peaches, pears, plums and grapes are raised to some extent in nearly all the states of the Union.

The apple is the most widely grown and widely used fruit of our country. There are several important apple areas. One extends from southern Virginia to northern Georgia; another reaches the entire length of the Ohio valley and for quite a distance up the Missouri valley and into Arkansas; another is in the district east of lake Michigan; another stretches from lake Erie eastward to Maine; still another includes Oregon, Washington and Idaho.

The best-known peach areas in the country are in the states between the Hudson river and the Potomac, in the southern part of the Atlantic slope, in eastern Texas, on the eastern shores of lake Michigan and in California.

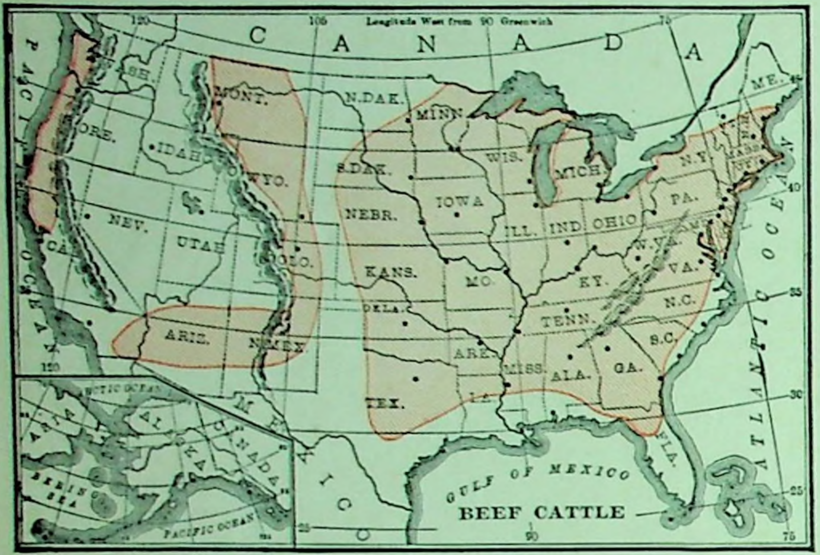
The states of Georgia, California and Delaware are specially noted for this fruit, but many other states of the country also have large peach orchards. In California a large business is done in canning and drying this and other fruit.

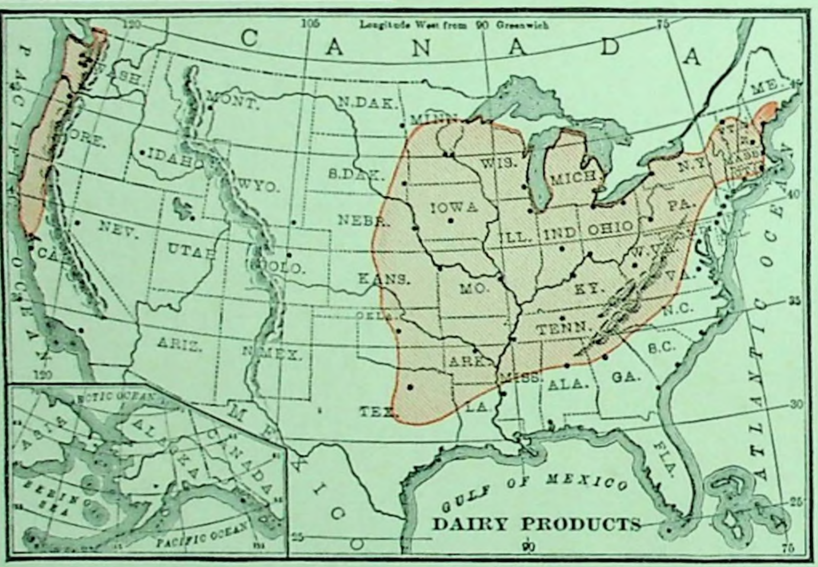
Pears have about the same distribution as apples. The largest crops are grown in California and New York.

Large quantities of grapes grow along the eastern shore of lake Michigan, the southern shore of lake Erie and eastward through the Mohawk valley. The grapes of California are marketed largely in the form of raisins, but great quantities of the fruit are pressed for the juice, which is made into wine.

Raisins are sun-dried grapes. The curing of the fruit requires very hot and dry weather. A few days of rain in the curing season may spoil a year's crop.

Southern California and Florida have many orange, grapefruit and lemon groves. These states supply the best oranges in the world.





Most of the lemons and oranges imported into the United States come from Italy. The West Indies and Central America supply bananas.

Topics: — Apples; peaches; pears; grapes; oranges, grapefruit and lemons.

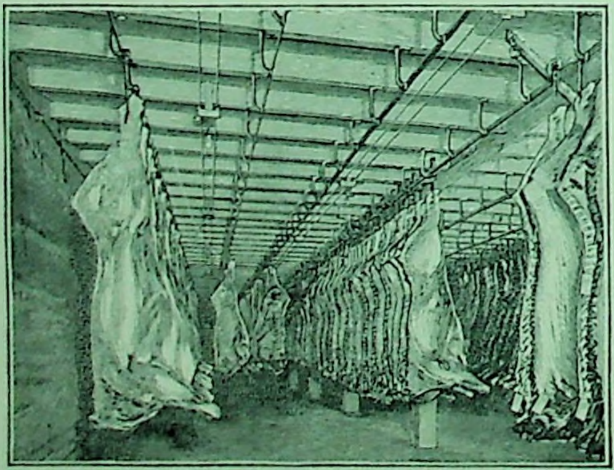
50. Cattle and Dairy Products

Cattle are not native to any part of America, but they now thrive in great numbers on the prairies, the Western plains, the pampas, the campos and the llanos, — in short, wherever there is good grass land.

There are many cattle in every state in the Union. Many of them are on the prairies, where grass and corn are plentiful, but large numbers are raised on the Southern plains and on the Western plains.

The great state of Texas raises more cattle than any other state in our country. Iowa ranks second, but in proportion to size ranks first.

As the population of the Western plains is small, nearly all the cattle raised in that region are sent to the cities farther east, — to Chicago and Kansas City (Kansas), where the beef is dressed for market. The prairies are more thickly settled, and the cattle of that portion of the country are therefore mostly used near the places where they are raised.


Beef room in a packing house

Not many years ago most of the cattle from the farms and ranches in the Southern states were sent north to be fattened for market in the corn-producing states of the prairies. Now the southern cattle are fattened on the cotton-seed meal and hulls, left after extracting the oil from the seeds. These by-products of the cotton-seed oil industry form the chief food for fattening almost countless cattle.

The packing of beef, the curing of hides and the making of butter and cheese are very important industries. Chicago is the largest meat market in the world.

The hides of cattle are tanned and made into leather. One part of the tanning process consists in soaking the hides in water in which certain kinds of bark have been steeped. Hemlock bark is often used, and as hemlock trees abound in Pennsylvania, Wisconsin and the northern New England states, much of the tanning is done there.

What are some of the articles made of leather?

More boots and shoes are made in Massachusetts than in any other state, and Boston is a leading leather market. Philadelphia deals largely in leather.

Butter, cheese and milk are known as *dairy products.* Wisconsin and New York rank first among the dairy states; but milk, butter and cheese are valuable products in nearly all parts of the prairies, as well as in the states farther east.

The United States exports beef and cattle to Great Britain and other European countries. Dairy products and leather also are exported to the same countries.

Topics: — Cattle regions of America; cattle of prairies; cattle of Western plains; beef-packing cities; use of hides; leather and shoes; dairy products; export of cattle products.

51. Sheep and Wool

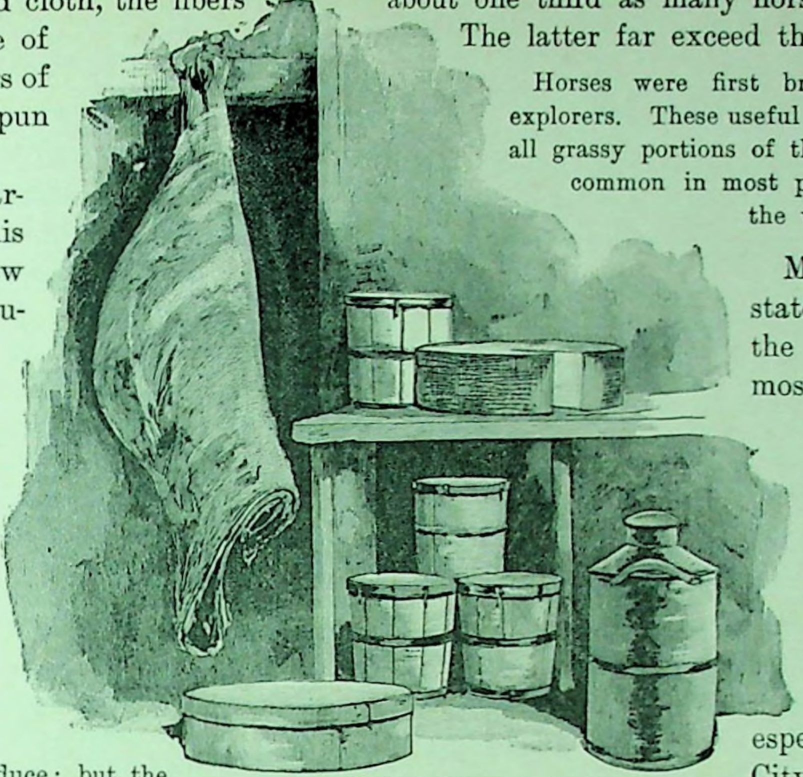
Wool ranks in value and usefulness next to cotton as a cloth-making fiber. All the gold and silver ore mined each year in the United States would not pay for the woolen cloth made here in the same time. The skins of lambs and sheep are also of great value for making many articles.

In the United States there are three principal districts in which large numbers of sheep are raised. One of these includes the northern half of the Allegheny plateau and extends westward over the prairies; another is in southwest Texas; the third is in the Western highland.

In our country most of the great woolen mills are in New England. New York, New Jersey and Pennsylvania.

In making woolen yarn and cloth, the fibers of wool are put through some of the same processes as the fibers of cotton. They are carded, spun and woven.

Boston is a great wool market, because it distributes this fiber to the mills of the New England states. In the manufacture of woolen carpets Philadelphia takes first rank among the cities of the world.

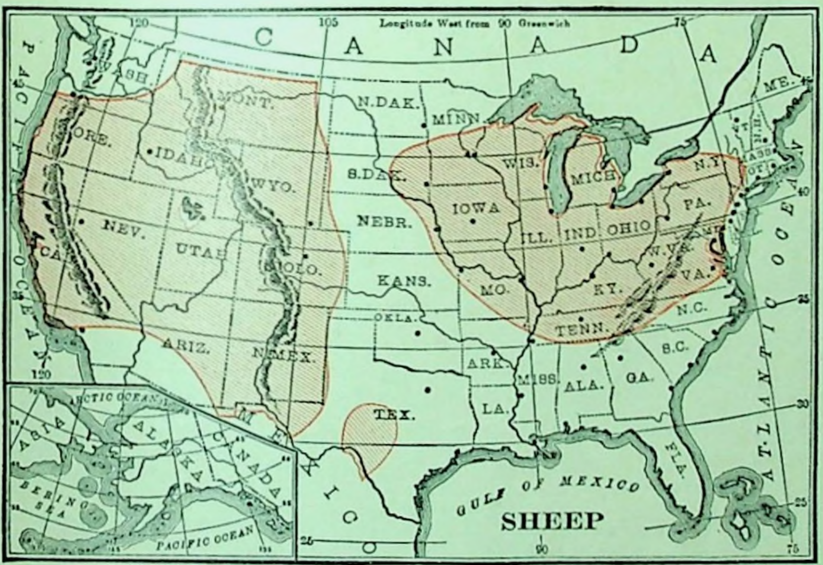


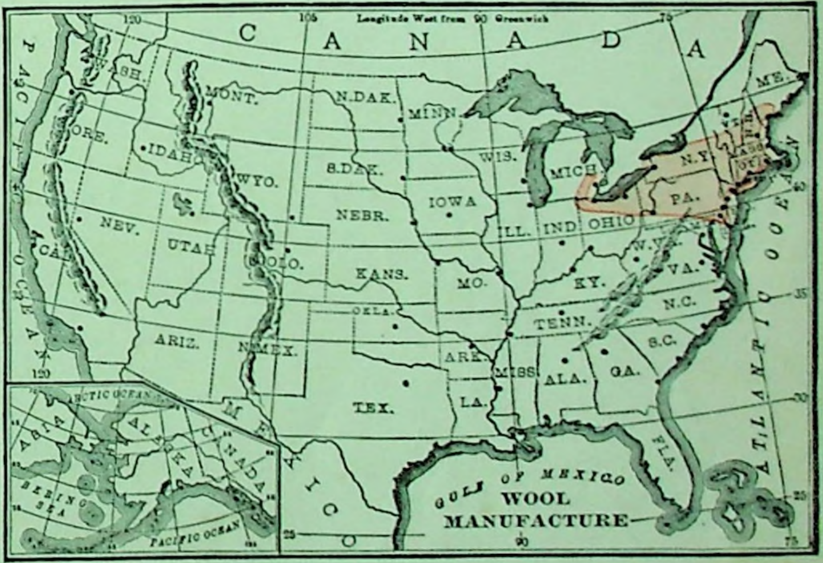
Beef and dairy products

In the production of wool the leading regions of the world are eastern Australia and New Zealand; Argentina; Great Britain; the steppes of Russia; and the United States.

Our country and Great Britain must import wool and sheepskins, because they use in their mills and factories more than they produce; but the other regions named above export these products, chiefly to Great Britain, France, Germany and the United States.

Helps: — Locate principal sheep districts. In what part of country are most woolen mills? What is said of Boston? Of Philadelphia? Name principal sheep regions of world. Which of these regions import wool? Which export wool?





Topics: — Sheep districts of United States; where woolen cloth is made; wool markets; sheep regions of world; countries that import wool.

52. Horses, Mules and Hogs

Horses and mules are raised in greatest numbers in the most fertile districts, where there is work for them on the farms. There are about one third as many horses as cattle in our country. The latter far exceed the former in value.

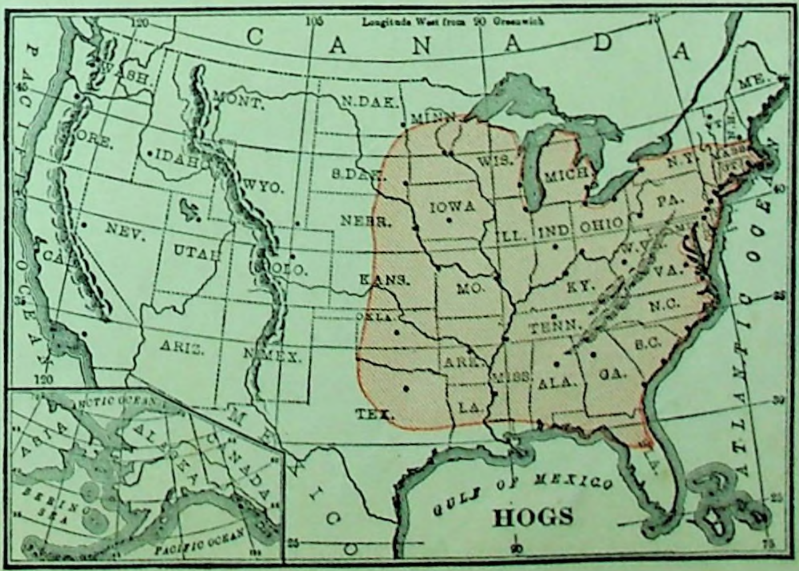
Horses were first brought to America by Spanish explorers. These useful animals are now raised in nearly all grassy portions of the New World. Mules also are common in most parts of America, but chiefly in the warmer regions.

Many hogs are raised in every state in the Union, but chiefly in the districts which produce the most corn. This grain is the best fattening food for swine.

The packing of pork, the curing of hams and the making of lard employ many thousand workmen in our country. The principal pork-packing centers are the large cities of the prairies, more especially Chicago and Kansas City (Kansas).

Immense quantities of pork, bacon and lard are sent abroad, chiefly to the manufacturing cities of England and other manufacturing countries of western Europe.

The United States produces about as much pork as all Europe.



Topics: — Horses and mules; hogs; pork-packing centers; pork products exported.

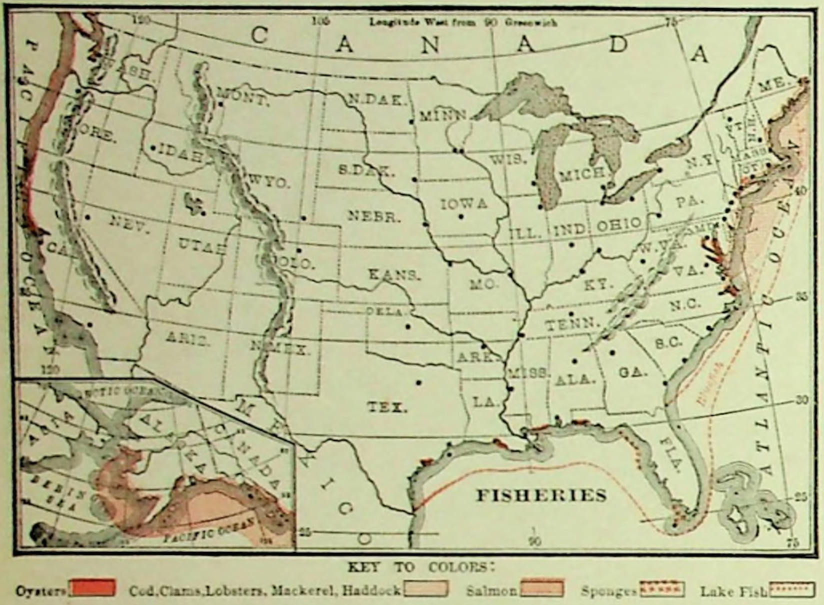
53. Fisheries

Oysters. Oysters are salt-water shellfish and are the most valuable food product taken from the shore waters of the United States. The most extensive oyster fisheries in all the world are carried on in Chesapeake bay.

Several thousand boats and many thousand men are there employed. Smaller oyster beds are found along several other parts of the coast of our country.

Baltimore is the center of the oyster trade.

The oyster fisheries are scattered along the coast from Cape Cod to Mexico, — wherever the sea-bottom is firm. Young oysters die unless they attach themselves to hard substances, such as shells, pebbles or larger stones.



Chesapeake bay and Long Island sound yield more oysters than all the other places on our coasts. Many of the oysters are gathered by means of tongs having long handles. In some places dredges are dragged over the bottom to gather the shellfish.

In the oyster fisheries France ranks next to the United States. Great Britain also has extensive beds.

Cod and Haddock. On our eastern coast the cod fisheries rank next in importance to the oyster fisheries. Here the codfish, the haddock and the halibut are caught mostly on *banks*, or shoal places in the sea.

Off the eastern coast of North America the best fishing grounds for cod and haddock are shoal places in the sea, known as the *Grand Bank*, southeast of the island of Newfoundland, and *Georges Bank*, east of Cape Cod. The halibut is found in about the same places as the codfish. The former is the largest of flatfish and sometimes weighs 100 pounds.

Most of these fish are caught on hooks hung on long lines that are anchored on the bottom of the sea. Several times a day these lines, called *trawls*, are drawn up. The fish are then taken from the hooks, fresh bait is put on and the trawls are again sunk. Some of the fish are carried fresh in ice to market, but large quantities of codfish are cleaned and salted aboard the fishing schooners. When taken ashore the salted codfish are spread out to dry and are later packed in boxes for shipment.

Other Fish and Shellfish. The clam and the lobster are found along the shores northward from Chesapeake bay. Both are valuable food products.

Mackerel migrate in swarms, or *schools*, northward along our coasts in spring, and southward in autumn. These fish are caught chiefly in large nets called *seines*. Eastern mackerel are taken between cape Hatteras and the gulf of St. Lawrence.

The salmon fisheries are a very important industry in the rivers, bays and sounds of the Pacific coast, from San Francisco to Alaska. Fish of this kind enter the rivers to spawn, or deposit their eggs. The largest salmon canneries are near the mouth of the Columbia river, around Puget sound, and along the coast of Alaska.

The three following paragraphs show where the principal food fishes are taken or caught by fishermen of our country. The list is for *reference* only and need not be studied.

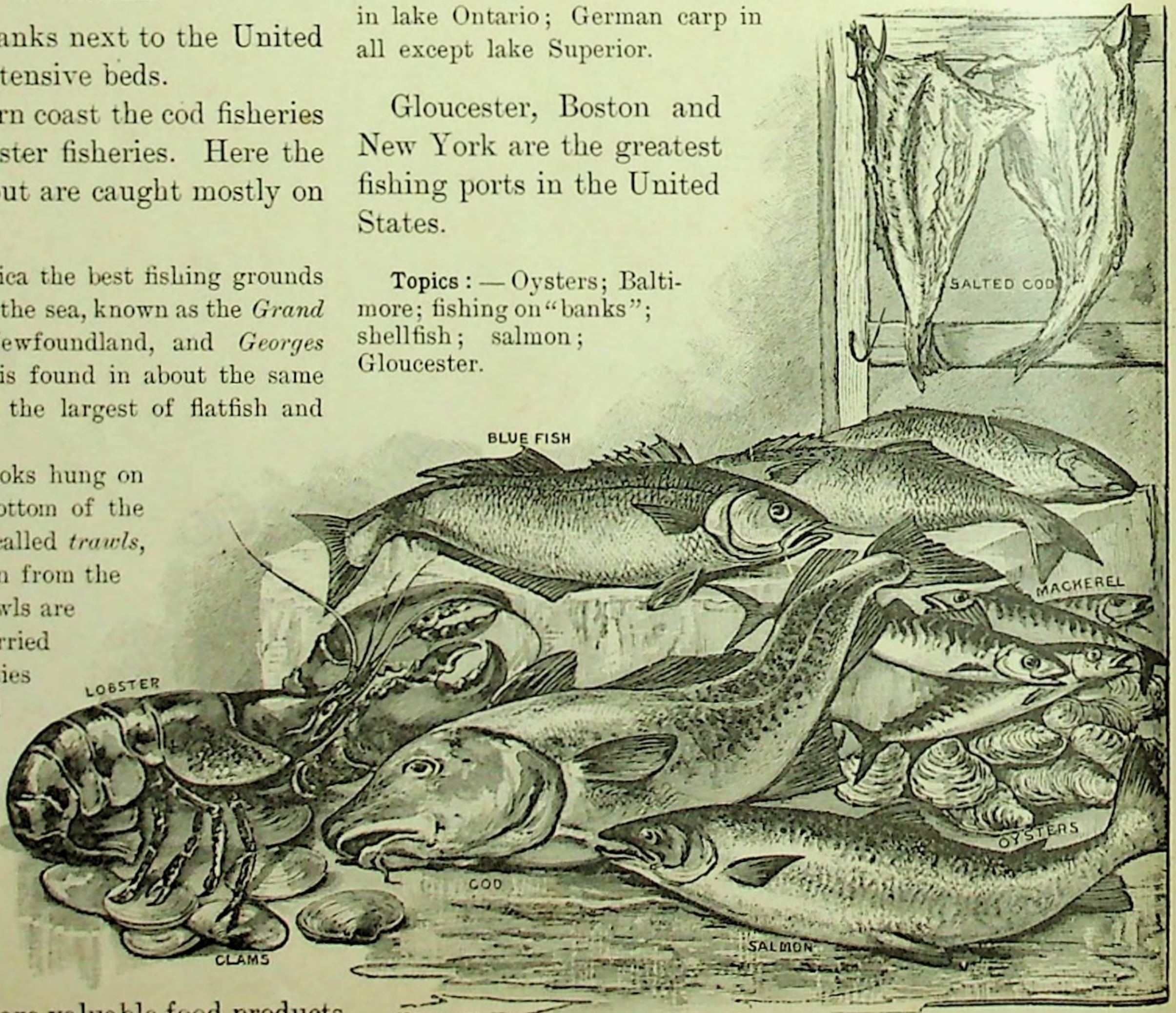
Atlantic coast: Oysters, Cape Cod to Mexico; codfish, New Jersey to the Grand Bank of Newfoundland; clams, Florida to Maine; shad, Florida to Maine; lobsters, Delaware bay to New Brunswick; mackerel, cape Hatteras to gulf of St. Lawrence; haddock, same as cod; halibut, chiefly from Cape Cod to Grand Bank; bluefish, Cape Cod to Mexico; alewives, Florida to Maine; squeteague, Cape Cod to Mexico; crabs, Texas to Long Island; menhaden, Texas to Maine; mullet, North Carolina to Mexico; herring, Marthas Vineyard to Newfoundland; striped bass, Florida to Maine; Spanish mackerel, New York to Mexico.

Pacific coast: Salmon, San Francisco bay to Alaska; halibut, Alaska and coast of Washington and Oregon; sea bass, shad and flatfish, entire west coast of our country, except the strait of Juan de Fuca.

Great Lakes: Whitefish, lake herring, lake trout, pike, perch and yellow perch, in all the lakes; alewives in lake Ontario; German carp in all except lake Superior.

Gloucester, Boston and New York are the greatest fishing ports in the United States.

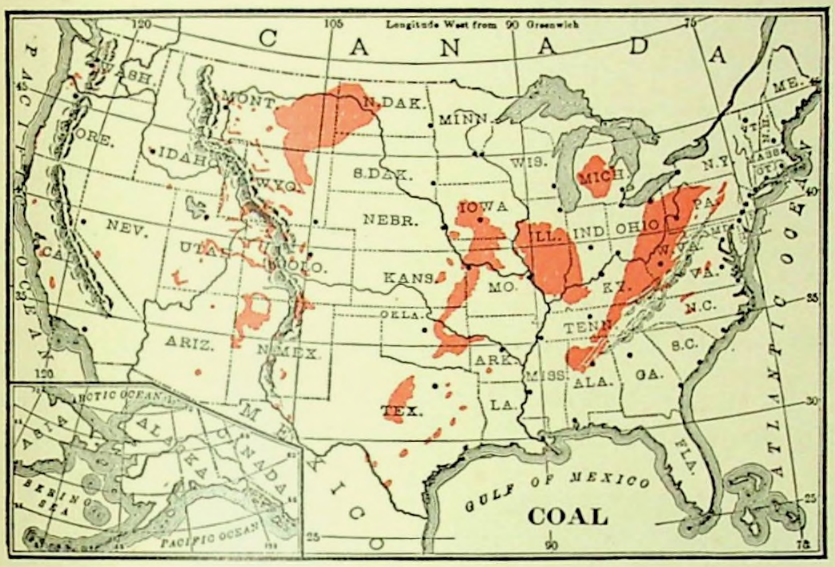
Topics: — Oysters; Baltimore; fishing on "banks"; shellfish; salmon; Gloucester.



54. Coal

What does lesson 38 tell about the origin of coal fields?

In the United States there are three very large coal areas and many small ones. The most important coal fields extend along the Appalachian highland; the second begins not far from the southern end of lake Michigan and reaches slightly beyond the Ohio and Mississippi rivers. The third is west of the Mississippi and is chiefly in the lower part of the Missouri basin.



The latter two areas are in beds of rock buried beneath the rich soil of the prairies. The first is in layers of rock, some level and some arched into mountain folds, from the state of Pennsylvania to where the ridges dip under the Gulf coastal plain in Alabama.

The smaller areas are chiefly in the Rocky mountain states, but there is a good coal field in the Cascade mountains of Washington, and another reaching from Arkansas, through Oklahoma, into Texas. Large coal fields are now located in Alaska.

Pennsylvania, at the northern end of the Appalachian coal field, supplies more coal than any other state in the Union. Illinois, Ohio, West Virginia, Kentucky, Indiana and Alabama also hold high rank. Alabama ranks highest among the Southern states in the production of coal.

Pennsylvania furnishes nearly all the hard or *anthracite* coal mined in the country, as well as a large part of the soft or *bituminous* coal. The hard coal is found near the northern end of the ridges known as the Allegheny mountains.

The coal fields have aided greatly in developing manufactures. Especially in regions having both iron ore and coal, great mills and factories have been built for making all sorts of steel and iron ware.

The widely scattered coal fields have greatly aided the railroads by supplying fuel for the engines.

The coal fields of Illinois and other prairie states have been of immense value to the settlers over the wide fertile plains where wood is scarce but where the winters are very cold. The Illinois coal fields have also helped to build up the manufactures of Chicago and other lake ports, all of which can easily obtain iron ore from mines near the shores of lake Superior.

All the large cities in or near the coal fields are important markets for coal. Among the cities having the largest trade in this product are New York, Philadelphia, Pittsburgh and Chicago.

The countries of western Europe have extensive coal beds and iron mines, and, their people being progressive, they have taken a leading place among the manufacturing countries of the world.

Topics: — Origin of coal fields; three principal coal fields of United States; principal Appalachian states in coal area; hard coal; coal in development of country; coal markets; countries of Europe having iron mines and coal fields.

55. Iron

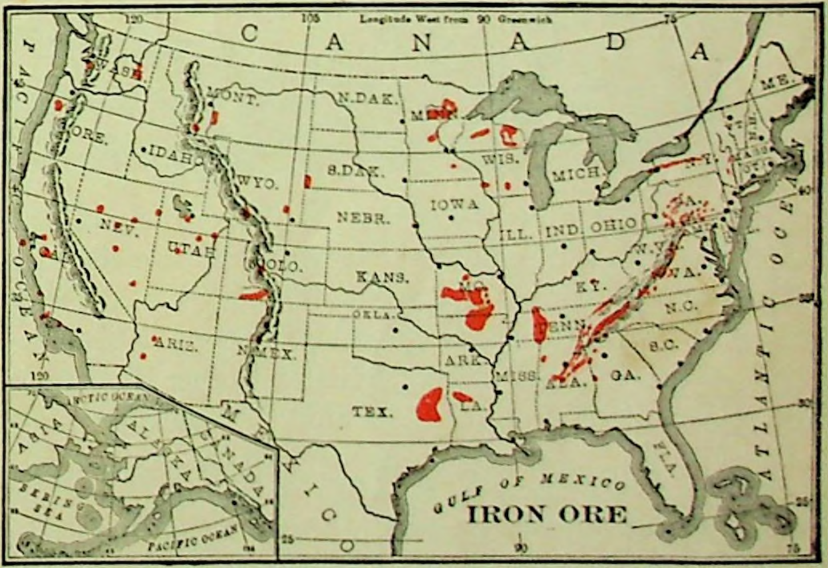
What does lesson 38 tell about the method of extracting iron and steel from iron ore? About the uses of iron and steel?

There are four principal iron-ore districts in the United States. These are all mountain regions that have been greatly worn down by rains and streams during long ages, thus laying bare the beds of rock that were once deeply buried.

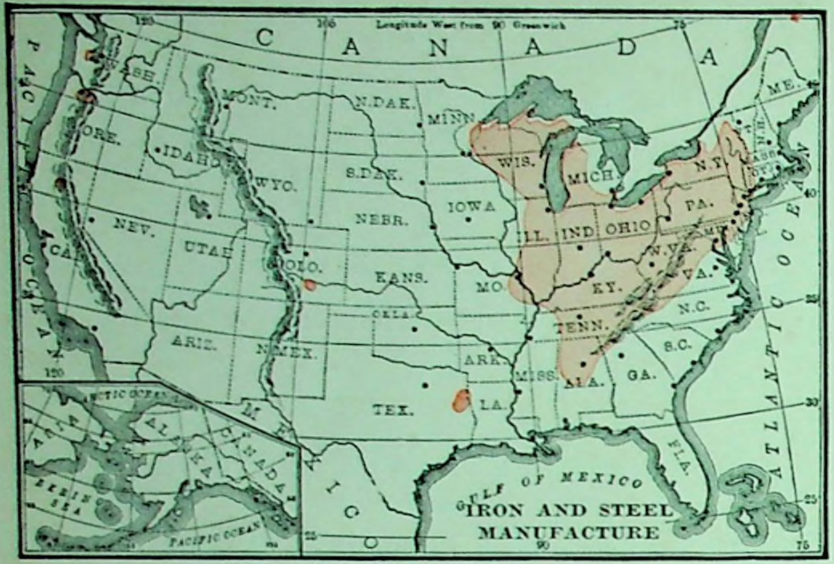
The most productive district is near the shores of lake Superior; the other districts are the Allegheny mountains of Pennsylvania and West Virginia; the southern part of the Appalachian highland in Alabama and Tennessee; the Adirondacks of New York.

Each of the great iron regions is fortunate in being within easy reach of coal fields. The Appalachian region yields both iron ore and coal; the iron ore from the lake Superior region can meet the coal in the ports along the Great Lakes. The principal cities manufacturing iron goods have therefore grown up in the coal and iron districts in the eastern half of the country.

The iron ore of the lake Superior region is plentiful and pure. It is therefore so valuable that it can compete with other iron ores in their own districts, even though heavy freight charges must be paid to transport it great distances. Most of the lake Superior ore is carried by steamers to the various lake ports, but part is sent by rail. The lake ports use only about one third of the ore in their own manufactures. The rest is sent to inland cities, but chiefly to those in the states that border on the Great Lakes.



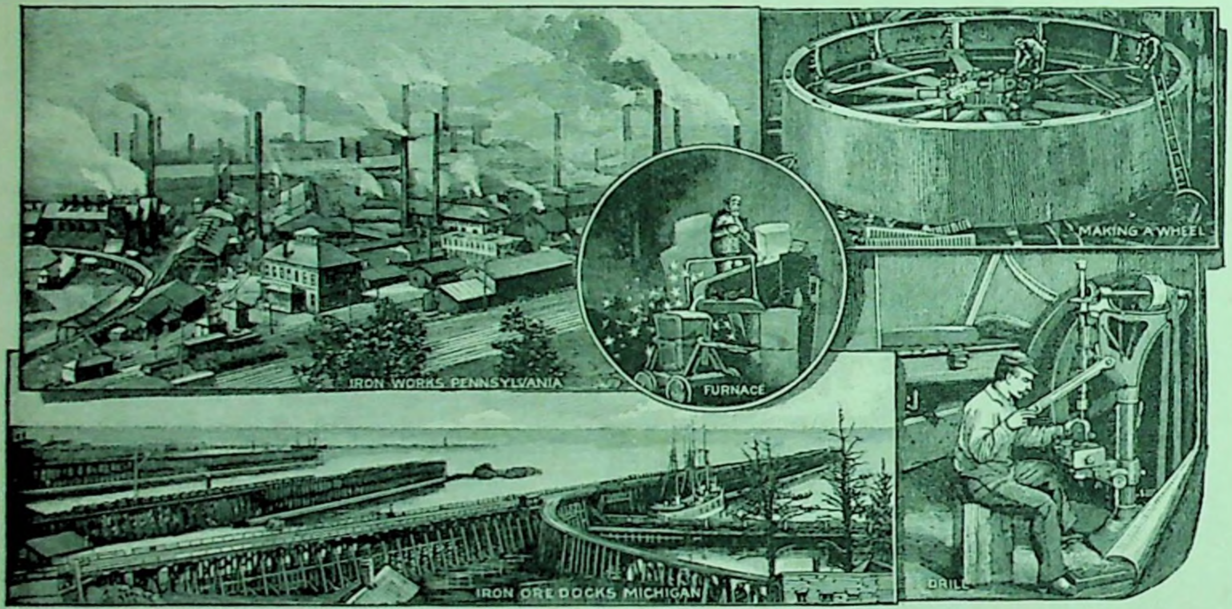
Pittsburgh is the most important iron and steel manufacturing center in the country. Several cities on the Great Lakes (such as Chicago, Gary, Cleveland and Buffalo), as



IRON AND STEEL MANUFACTURE

well as Philadelphia and other Atlantic cities, manufacture immense quantities of iron and steel goods. Birmingham (Alabama) is in an important iron and steel district.

What does lesson 38 tell about articles made of iron?



The United States ranks first in iron-ore production. Large quantities are mined in Great Britain, France and Germany. The United States exports many kinds of iron articles to foreign countries, and also imports large quantities of tinned iron, cutlery, rails and other iron wares from Great Britain and other European countries.

Topics: — Principal iron-ore districts of United States; benefit of having iron and coal in same district; iron ore of lake Superior region; principal iron cities; rank of United States among iron-producing countries; some iron imports of this country; where from.

56. Petroleum and Natural Gas

What does lesson 38 tell about petroleum? about natural gas?

The United States produces more petroleum than any other country in the world. Among its best oil fields are those in Oklahoma, California, Kansas, Texas, Louisiana, Wyoming and the states south of the Great Lakes. There are also valuable oil wells in other parts of our country, as shown by the map. The California and Oklahoma oil fields are among the most productive yet found. A single well in Oklahoma has sent out 225,000 barrels of crude oil in one day.

Much of the crude oil is refined in the cities of Pennsylvania and those on or near New York bay. Large quantities are also refined in Texas and California. Millions of dollars' worth of oil is sent each year to the countries of western Europe and southeast Asia, mostly from New York, Philadelphia, Port Arthur (Texas) and San Francisco.

Long pipes have been laid from the tanks in the oil fields to some of the cities in which petroleum is refined. Some of these pipes are hundreds of miles in length. The oil is forced through them by means of powerful pumps.

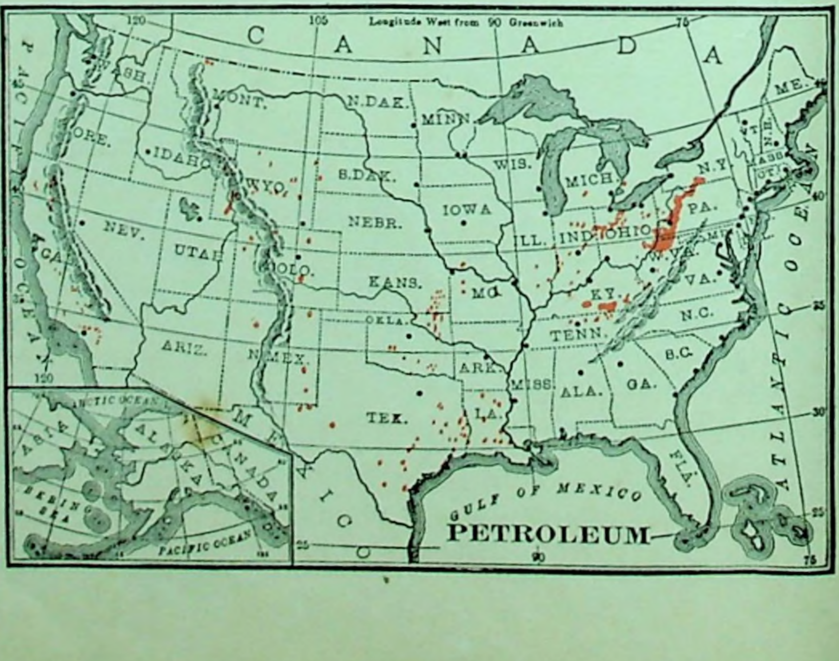
A large amount of oil is transported in great tanks placed on cars. Much of it is also shipped in bulk in barges or steamers.

The petroleum exported each year from the United States is of greater value than the gold mined here in the same time.

In most of the oil fields of our country, and extending in many cases somewhat beyond their limits, is found natural gas. This gas, like petroleum, is obtained by sinking pipes down to layers of porous rock in which the gas and the oil have been stored up by nature. The most valuable gas wells in the United States are in West Virginia, Pennsylvania, Ohio and Oklahoma. In many cities in the gas fields the low cost of gas as a fuel has caused very rapid growth in manufactures. This fuel is of great value in iron mills and glassworks.

Natural gas is often carried long distances in pipes and is used for heating and lighting purposes. A large part of the gas used in many cities and towns is thus obtained.

Topics: — How oil is refined (*see lesson 38*); principal oil fields; other fields shown on the map; cities refining oil; export of oil; location of gas fields; states having richest gas wells.



PETROLEUM

57. Gold, Silver, Copper, Lead and Zinc

What does lesson 38 tell about gold? About silver?

The richest gold mines in the world are in the Western highland of our country; the mountains of southeast Australia; southern Africa; the Ural mountains between Russia proper and Siberia. Alaska and the portion of Canada in the Yukon basin, a little east of the Alaskan boundary, have very rich gold fields. The Canadian gold region is known as the *Klondike region.*

The Rocky mountains in Colorado, the Sierra Nevada in California and Nevada, and the mountains of far-off Alaska yield most of the gold mined in this country, though all the states of the Western highland have valuable gold mines.

Lesser quantities of gold are found in the southern Appalachians.

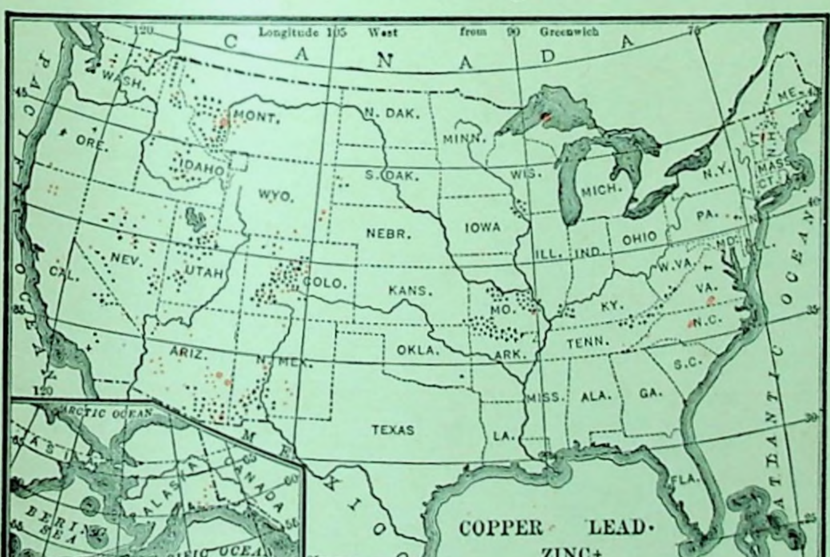
America supplies most of the silver used in the world. The principal regions are the Western highland of the United States, the plateau of Mexico and the countries of the middle Andes.

Nearly all the silver ore mined in this country comes from the Rocky mountains and the states of the Great Basin. Montana, Utah, Idaho, Nevada, Colorado and Arizona rank high in the production of silver ore.

The value of the gold and silver mined in this country is very great, but not nearly so great as that of either the corn, the wheat or the cotton.

What does lesson 38 tell about the uses of copper?

The United States leads all other countries in the production of copper. The most valuable mines are in Arizona, Montana, Utah and Michigan.



The countries of western Europe purchase great quantities of the copper mined in the United States.

One of the chief uses of copper is to make wires for conducting currents of electricity from power houses to cars, lights and electric machinery; also telephone wires.

What does lesson 38 say about lead and zinc?

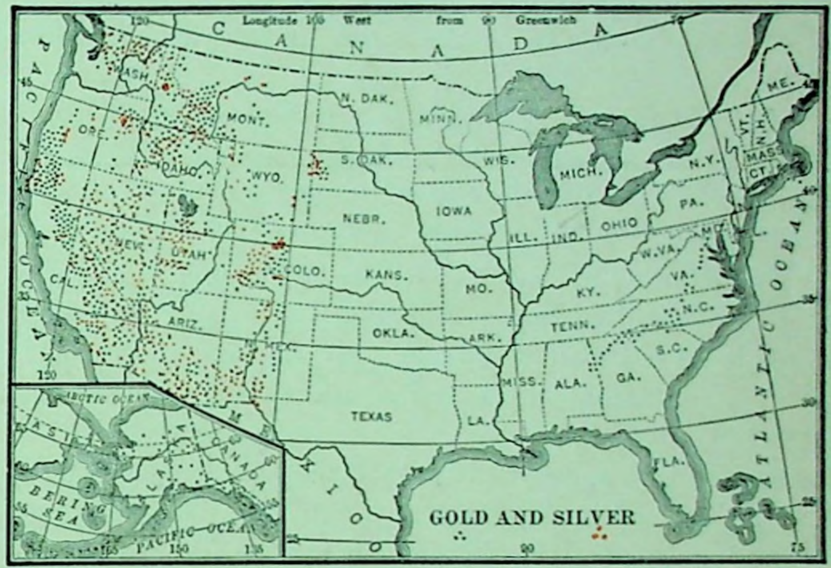
Most of the lead produced in our country comes from ores of silver mined in the Rocky mountains.

Large quantities of zinc and lead are obtained from ores in the Mississippi valley, especially in Missouri. The United States and Germany lead in the output of zinc; our country and Spain in the output of lead.

Topics: — Gold fields of the world; gold states of this country; silver regions of the world; states yielding most silver; value of precious metals; copper; zinc; lead.

58. Other Products

Rice. Rice is more widely used for food than any other grain. It is the principal article of food of many million people in east and southeast Asia, including the East Indies, and is much used also in our own and other highly civilized countries.



In the United States millions of bushels of rice are raised on irrigated lands in Louisiana, Texas, Arkansas and California. Great quantities are exported from these states.

The rice plant needs much moisture. Until recent years all the rice raised in our country was grown in the swampy or marshy lands of the delta and flood plains of the lower Mississippi and the neighboring streams, and in the wet lands of river and coastal marshes of South Carolina and Georgia.

What does lesson 32 tell about the culture of rice?

Sugar. The delta and flood plains of the lower Mississippi region, especially in Louisiana, produce nearly all the sugar cane raised in the United States proper; but the Hawaiian islands and Porto Rico send great quantities of raw sugar to this country. Most of the cane sugar used here comes from Cuba.

In Europe, and to a much smaller extent in some parts of this country, sugar is made from the juice of beets. Immense numbers of sugar beets are raised in the plains on the north, east and west of the Alpine highland. This kind of sugar has almost wholly taken the place of cane sugar in the markets of Europe.

Colorado, California, Utah and Michigan supply most of the beet sugar of this country. Austria, Germany, France, Russia and other countries of Europe produce much more beet sugar than the United States.

What does lesson 32 tell about sugar cane?

Early Vegetables. The Atlantic coast states, from Delaware to Georgia and Florida, send north immense quantities of fresh vegetables before the gardens of the northern states yield their crops. Texas raises early vegetables and fruits for the cities of the upper Mississippi valley.

Building Stone. Many large cities establish "fire limits" within which all new buildings must be made of stone or brick, unless a special permit is given to build of other material. This is to lessen the danger from fires. Most of the new large buildings in cities have frames of steel, which support not only the roof and floors, but also to a very large extent the stone or brickwork of the walls.

The places from which building stone is taken are called *quarries.* The principal kinds of building stone are limestone, marble, granite, sandstone and slate. Brick clay is also of great value. What does lesson 38 tell about each of these kinds of building stone?

Limestone is the most widely used building stone quarried in the United States. The principal limestone region extends in a broad belt from New England to Missouri, but Pennsylvania, Ohio and Indiana quarry the most stone of this kind.

Vermont supplies nearly half the marble quarried in the Union. Georgia, Tennessee and New York also produce large quantities of beautiful marble.

The most and the best granite is quarried in New England; Vermont supplies more than any other state.

The largest amount of sandstone comes from the Allegheny plateau in Ohio, New York and Pennsylvania. Much of this stone is ground into sand and used in making glass.

Pennsylvania yields more than half the roofing and flagging or sidewalk slate used in this country; but Vermont also has large slate quarries.

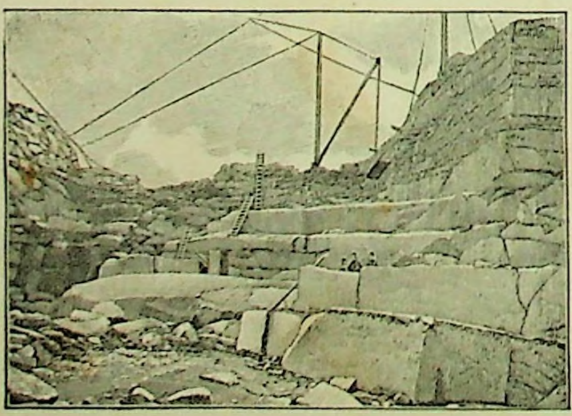
Topics: — Rice; sugar cane; sugar beets; early vegetables; fire limits in cities; bricks; quarries; principal regions for limestone; for marble; for granite; for slate.

59. Wild Animals of United States and Alaska

Large herds of bison, often called *buffaloes,* at one time grazed on the plains and prairies east of the Rocky mountains; but the white hunters and Indians have killed millions of them, and only a few small herds are now known to exist.

Countless deer also at one time grazed on the plains with the bison. Great numbers of these also have been killed, but many are still found in the forests and some wooded ranges of hills and mountains.

Thousands of reindeer, called *caribou,* feed on grass, moss and tender branches in the cold plains of the far north, in Canada and parts of Alaska.



Granite quarry

In the soft-wood forest belt in the cooler part of the temperate zone lives the great animal called the *moose,* the largest of the deer family. It feeds on leaves and branches. This animal is noted, not only for its size, but also for its speed and its broad flat antlers.

Slate quarry

Millions of small fur-bearing animals live in the soft-wood forest belt that extends from the northern part of the United States across Canada to Alaska.

There the cunning beaver feeds on berries, leaves and bark, and for safety builds its hut at the edge of a lake or a river. The watchful otter follows the streams, looking for fish. The sable and many other little fur bearers also make this region their home. The finest and best furs in the world come from the cold parts of the north temperate zone.

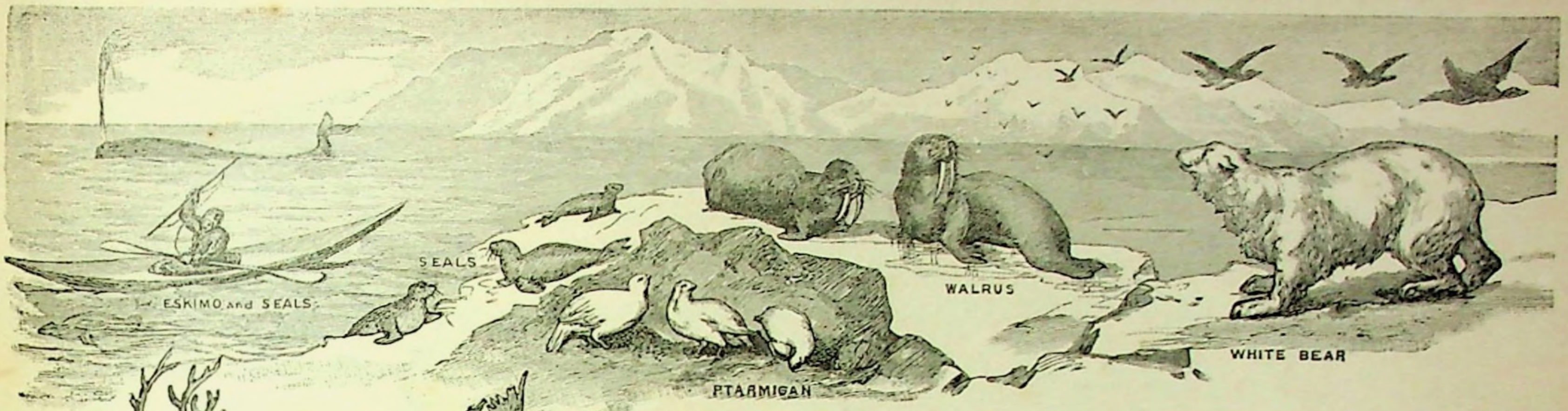
Among the animals of the great highland in the western part of North America are the fierce grizzly bear, the catlike puma and the graceful bighorn, or Rocky mountain sheep. Black bears and brown bears also are found in the large forest regions of this continent.

Many domestic fowl are found in nearly all places where the white man has settled in America, but most of them are natives of the Old World and, like the cattle, have been brought to America by the white man. The turkey, however, is a native bird of America. Large eagles build their nests in some of the mountain regions.

Alligators may be seen swimming in some of the streams and lagoons of the warmer part of the United States and the tropical lands farther south. Many are killed for their skins, from which fine leather is made.

Large quantities of food fish are caught in the shore waters of the United States and Alaska, and also in the large lakes and streams. Fishing gives work to many thousand men.

The polar bear, one of the largest of the bear family, is found in the Arctic regions of Alaska, as well as nearly all other lands bordering on the Arctic ocean. These bears are sometimes killed by Eskimos; the flesh is then eaten, and the skin is made into clothing. This great bear feeds chiefly on seals and fish. It is never found far from the sea in which its food lives.



Seals and walruses are common on the ice fields and in the icy sea.

Seals feed chiefly on fish that they catch with their sharp teeth. They swim with great speed, but are clumsy on the land. Some seals are highly valued for their fine furs. Seals form a large part of the food of Eskimos.

Many seals are caught on the Pribilof islands, a small group in Bering sea. The seal industry here is under the control of the United States government, which decides on the number that may be killed in a season. In the summer large herds of seals visit these islands to feed and rear their young. Many are then killed for their fur. Thousands also are destroyed while swimming in the sea; many of the latter sink and are lost.

Whales are found in the icy Arctic waters. Many were formerly killed for their blubber, from which oil was obtained by heating; but fewer are now needed, as petroleum, gas and electricity have largely taken the place of whale oil for lighting purposes.

One kind of whale has a large sieve along each side of its mouth. This sieve is made of blades of horn called *whalebone*. By means of the sieves the whale gathers its food from the sea water which it takes into its mouth. More than 2000 pounds of whalebone have been taken from the mouth of a single whale.

The blubber of the so-called *sperm whale* yields valuable sperm oil. This species of whale is found in the three oceans of the torrid zone and the warmer parts of the temperate zones. The sperm whale has teeth and in this regard is unlike the whalebone whale. The former sometimes grows to the length of over 60 feet and its body may yield more than 100 barrels of oil.

Among the smaller animals of the Arctic region are white foxes and hares.

During the short Arctic summer myriads of sea fowl visit the shores of the cold seas to build their nests and catch food. Among these are ducks, geese and auks. The Eskimos kill many of the birds for food and use the soft feathers in making clothing and beds. The eggs also are used for food.

One kind of duck that builds its nest in the far north is the eider duck. This bird lines its nest with soft feathers plucked from its breast. These fluffy feathers are gathered and sold as *eider down*.

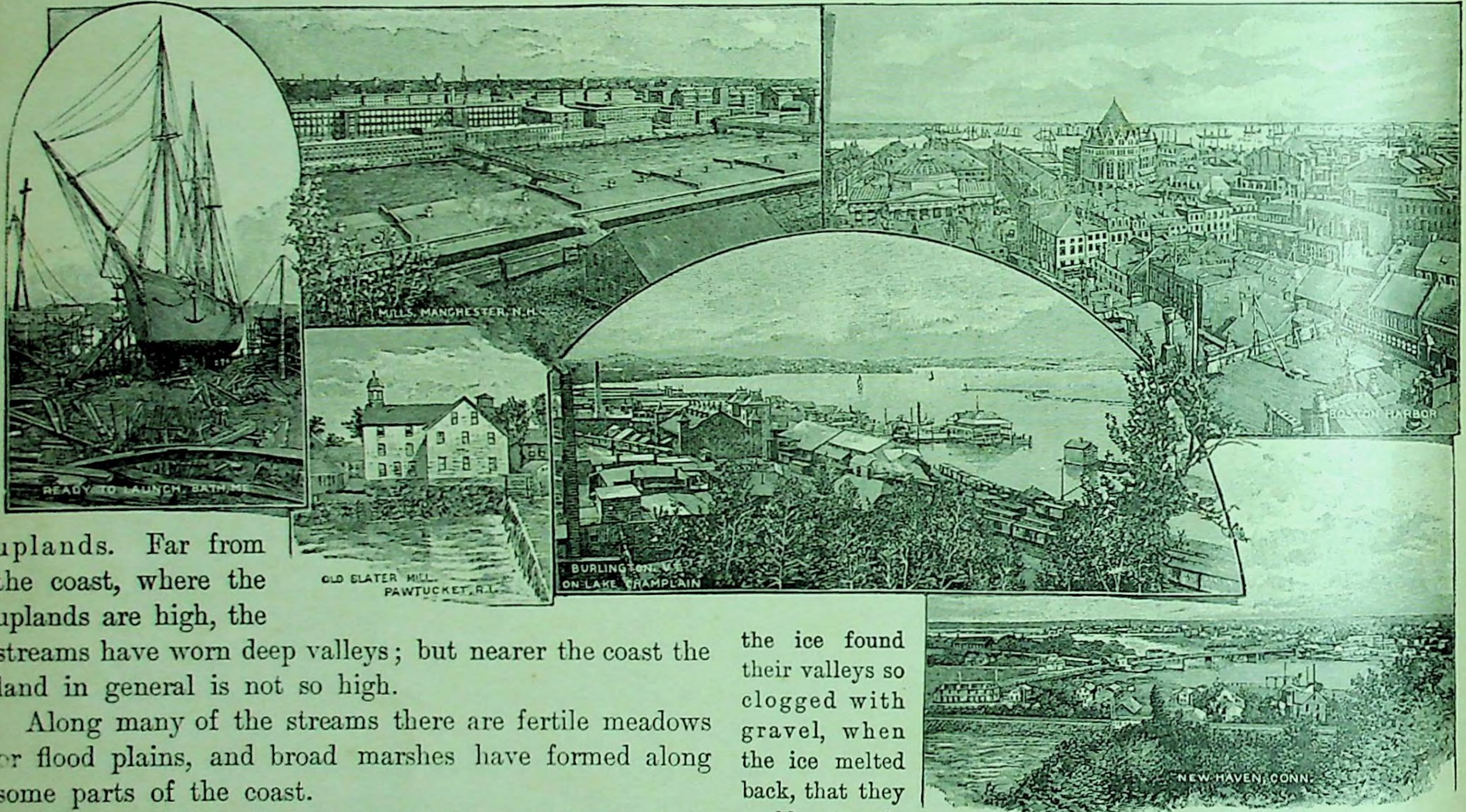
Topics:—Bison; deer; caribou; moose; fur-bearing animals; large animals of Western highlands; black and brown bears; domestic fowl; alligators; food fish; polar bears; seals; walruses; whales; other small polar animals; eider down.

NEW ENGLAND STATES

60. Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut[1]

The northern and western parts of New England are very hilly or mountainous. The highest lands are the peaks of the White mountains in New Hampshire, with Mt. Washington as the crowning height. Many hills and low ranges extend across northern Maine, turning most of the streams southward. Farther west the Green mountains form a backbone for the state of Vermont and join the Hoosac range, which dies away southward in ridges of hills in Connecticut.

The rest of New England, except some parts along the coast or in the river valleys, consists in general of hilly uplands. Far from the coast, where the uplands are high, the streams have worn deep valleys; but nearer the coast the land in general is not so high.


READY TO LAUNCH, BATH, ME.
MILLS, MANCHESTER, N.H.
BOSTON HARBOR
OLD SLATER MILL, PAWTUCKET, R.I.
BURLINGTON, VT. ON LAKE CHAMPLAIN
NEW HAVEN, CONN.

Along many of the streams there are fertile meadows or flood plains, and broad marshes have formed along some parts of the coast.

The rivers show how the land slopes. The northern and western parts of Vermont slope towards lake Champlain or northward to the St. Lawrence valley. Between the Green and the White mountains lies the long fertile valley of the Connecticut river, sloping to Long Island sound. Farther east, the Merrimack, Kennebec and Penobscot rivers show that the general slope of the country is southward, though some of the smaller streams flow to the southeast.

New England has thousands of useful lakes and swift streams. They have done much towards building up the industries of this section, but to learn how they were formed we must study about a vast sheet of ice that once spread over this land.

Long ages ago the climate of New England, as well as of all the states westward around the Great Lakes and also Canada, was so cold that the summer sun could not melt away the winter snow. It was like winter all the year, just as it is now in the cold lands of the far north. After many years the snow became very deep. Part of the snow under the heavy mass was changed to solid ice, and an ice sheet was formed, perhaps thousands of feet deep.

The sheet of ice slowly moved towards the sea, pushing the soil along and grinding the surface of outcropping rocks. Such a great mass of ice could easily fill the valleys and crowd out the rivers.

At length the climate became warmer, and the ice sheet slowly melted away, leaving the gravel, sand and finer soil in great heaps or spread out roughly in plains. In some places the gravel and sand were left in ridges directly across river valleys; and when the ice melted back far enough to let streams run in the valleys, such ridges held back the water and formed lakes. Nearly all the thousands of lakes in New England were formed in this way, back of ridges of sand and gravel left by the melting ice in the river valleys.

Most of the rivers that were pushed out of their valleys by the ice found their valleys so clogged with gravel, when the ice melted back, that they could not again flow in the same places. Many of them flowed in new channels down steep slopes, forming rapids; or over cliffs, forming falls. Thus we find that the rivers of this section contain many rapids and falls, affording water power that has made New England famous for its manufactures. The lakes are great storehouses of water, and they help to keep an even flow in the rivers in times of drouth.

At about the time when the heavy ice sheet was over this part of the country the coast line of New England, as well as that of all Canada, slowly settled in the sea. The salt water partly filled many valleys of the rough land, but left the tops of the ridges standing out as peninsulas or islands. This is the reason why the coast is so irregular, and why there are so many deep and safe harbors.

After the sheet of ice melted it must have taken a long time for the common plants from warmer parts of the country to spread their seeds over the barren land, and for great trees to drop their seeds and grow farther and farther northward; but at length large portions of New England were forested, while rich grasses grew in the river valleys and on the uplands.

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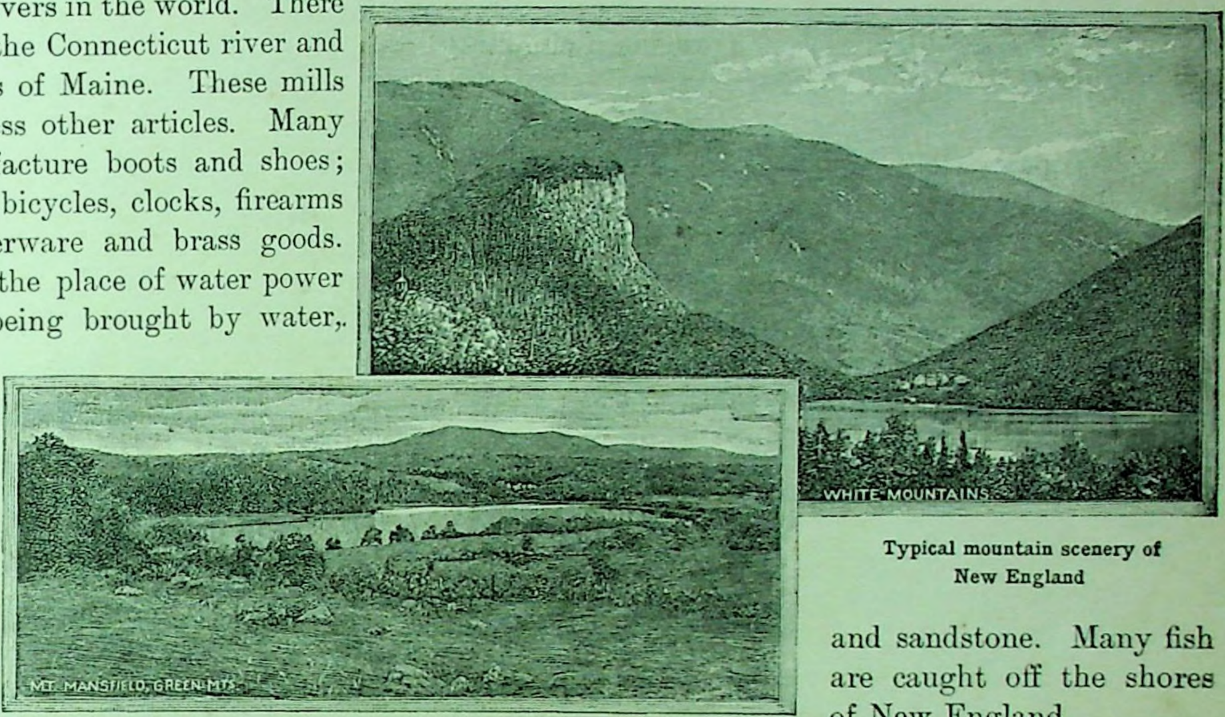
[1] The map studies on page 90 should precede this lesson.

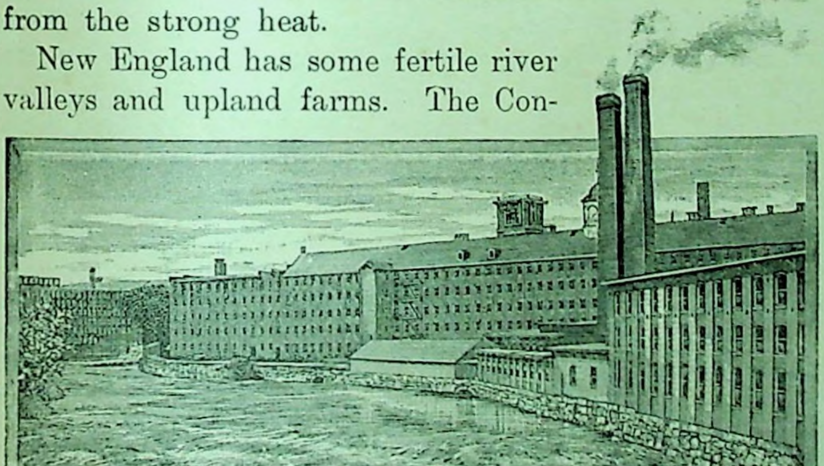
The falls and rapids in nearly all the large streams of New England were early used for water power. More mill wheels are turned by the Merrimack and Blackstone rivers than by any other two rivers in the world. There are also many great mills on the Connecticut river and its branches, and on the rivers of Maine. These mills make cloth, paper and countless other articles. Many cities of New England manufacture boots and shoes; others fine cutlery, hardware, bicycles, clocks, firearms and nearly all kinds of silverware and brass goods. Steam has now largely taken the place of water power from streams, coal for fuel being brought by water, chiefly from Pennsylvania; but the costly machinery and skilled workmen of New England still hold a large portion of the manufacturing industry to this section, although it is far from many of the regions that produce the cotton, wool, hides, iron ore and other kinds of raw material.



Typical mountain scenery of New England

New England has the severe winters and the warm or hot summers of the cooler part of the north temperate zone. Plentiful rains fall in the storms of the westerly winds. When the wind blows from the south, from over the Gulf stream, even the days of midwinter become mild or warm; but when winds blow from over the polar current that flows along the east coast, the weather becomes chilly, and in winter often brings a heavy fall of snow. In summer these winds afford relief from the strong heat.

New England has some fertile river valleys and upland farms. The Connecticut valley yields large quantities of tobacco. Nearly all parts of this section produce garden vegetables, and such fruits as apples and pears. There are excellent grass lands, and New England ranks high for its dairy products.



Cotton mills using water power from a rapid stream

The forests of Maine, New Hampshire and Vermont were once the chief source of lumber for the Atlantic states, but now the timber forests are fewer. Much of the soft wood of the trees is ground to pulp and used in making paper. Vermont is famous for its maple sugar.

The quarries of this group of states are very valuable. They yield immense quantities of granite, marble, slate and sandstone. Many fish are caught off the shores of New England.

Seaports have grown up on the deep harbors of this group of states. These ports, as well as many railroad centers, receive the raw material for the mills and factories and then ship away the manufactured goods. Railroads extend from New England to nearly all parts of the country.

Topics: — Names of states of New England; mountainous parts; White, Green and Hoosac mountains; hilly uplands; meadows and marshes; general slopes; ice sheet; lakes; rivers; water power; coast line; rivers famous for water power; manufactures; climate of New England; Connecticut valley; farm products; forests; quarries; seaports.

61. Cities of New England [1]

Note: — Before studying the cities in any one of the New England states, review what lesson 60 tells about its surface, climate and products; examine also maps of lessons 43 to 58 and learn what you can of the industries of this group of states.

Massachusetts. **Boston,** the chief trade center of New England, has a population of more than half a million. This city is the capital of Massachusetts.

Boston was founded by *Puritans,* ten years after the *Pilgrims* landed in Plymouth. They were called Puritans because they wished to reform the church in England. Other bands of the same people founded Salem and other places in New England; but Boston with its fine harbor soon became the chief town in these colonies.

Within six years after the first white people settled in Boston the colonists founded a small college which has grown into the great University of Harvard.

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[1] For a teacher merely to call the name of a city is a sufficient topic for recitation. A pupil should be able to give a clear idea, *in his own words and not the words of the book,* of the principal facts stated in the text. For this reason topics are not placed after lessons on cities. *See footnote 2, on page 90.*

So many poets and other writers have lived in or near Boston, and so many fine schools of all classes and grades, as well as libraries and art galleries, have been founded there, that Boston is often called the *Athens of America.*

Boston owes its growth very largely to the fact that here the railroads from the west reach the chief harbor on the New England coast. Among American cities Boston ranks high in foreign commerce.

The mills and factories of New England use great quantities of cotton, wool, leather and rubber. Part of this material comes through the port of Boston.

This city distributes cloth and leather goods made in the mills and factories of this section. Shiploads of western products — such as pork, cattle and beef — are sent from this port to Europe.

Boston, like all other great cities in our country, has extensive manufactures. Among the most valuable are boots and shoes and clothing.

There is a United States navy yard on Boston harbor.

Worcester, the second city in size in the state, is a railroad center and has a great variety of manufactures.

Fall River, New Bedford and **Lowell** manufacture more cotton cloth than any other cities in America. **Lawrence,** a little below Lowell on the Merrimack, takes high rank in both woolen and cotton goods.

Cambridge is the seat of Harvard University.

Lynn, Haverhill and **Brockton** lead in the manufacture of boots and shoes.

Springfield has a United States armory, where rifles for the army and navy are made.

More paper is made in **Holyoke** than in any other American city.

MAINE. **Portland,** the largest city in Maine, is on a fine harbor and has a large coasting trade. In winter, when the St. Lawrence river is frozen over, Portland serves as a port for much of Canada's foreign trade. Large cotton mills have been built in **Lewiston,** near falls that supply fine water power.

Bangor is a lumber market at the head of tide water on the Penobscot river, which flows from the Maine forest region.

Augusta is the capital of Maine.

NEW HAMPSHIRE. **Manchester** has extensive cotton mills on the Merrimack river. Some of the mills are run by electricity. Locomotives also are made in this city.

Concord, the capital, is well known for the granite which is quarried in its vicinity.

Portsmouth is the only seaport on New Hampshire's few miles of coast. A United States navy yard is situated at Kittery, Maine, opposite Portsmouth.

VERMONT. Vermont, the "Green mountain state," was the first state added to the original thirteen.

The small rivers flowing into lake Champlain are very useful in floating logs down to the sawmills. **Burlington** has the best harbor on this lake and is a great lumber market. **Montpelier** is the capital of the state.

Vermont produces nearly half of the marble used in our country; **Rutland** is the center of the marble industry. **St. Albans** is noted for its dairy products, and **Barre** for its granite.

RHODE ISLAND. **Providence,** the capital and the second city in size in New England, is at the head of Narragansett bay. This city has great woolen mills and the largest jewelry factories in the United States.

This city was founded by a minister who was forced to flee from the Puritan colony in Salem, for teaching what nearly all men in this country now believe, namely, that a man has the right to worship according to his own belief.

Pawtucket and **Woonsocket,** on the Blackstone river, have large cotton mills. In 1790, in the old Slater mill of Pawtucket (*see picture on page 88*), cotton manufacturing was first started in this country.

Newport is a famous summer resort.

CONNECTICUT. **New Haven** is the largest railroad center and port in Connecticut and is the seat of Yale University. This city manufactures hardware and firearms.

(*Continued on page 92.*)

Map Studies: — In what part of the United States is New England? Name the states in this group. Which state is largest? Smallest? Which states of this group border on New York? On Canada?

Which state of this group has no seacoast? Which has a very short seacoast? Which has the most broken coast? Which borders on Long Island sound? Locate Penobscot bay; Cape Cod bay; Buzzards bay; Narragansett bay. What capital is at the head of the last-named bay? What two islands partly inclose Nantucket sound?

Which part of New England is mountainous? Where is Mt. Katahdin? Mt. Washington? In which state are the White mountains? The Green mountains? In which states are the Hoosac mountains?

In what direction do the longest rivers of New England flow? What does this fact prove about the general slope of the group of states? Between what two states,[1] and across what two, does the Connecticut river flow? Into what body of water does it flow? What capital is on this river?

What river flows into Penobscot bay? From what lake does the Kennebec river flow? What capital is on this river? Describe the course of the Merrimack river. What capital is on this river? Between which states is lake Champlain? What mountains are east of this lake? West of it? Through what great river does the water of lake Champlain finally reach the sea?

At about what part of the distance from the equator to the north pole is the state of Maine? The northern border of one of these states is about midway between the pole and the equator; which state is it?[2]

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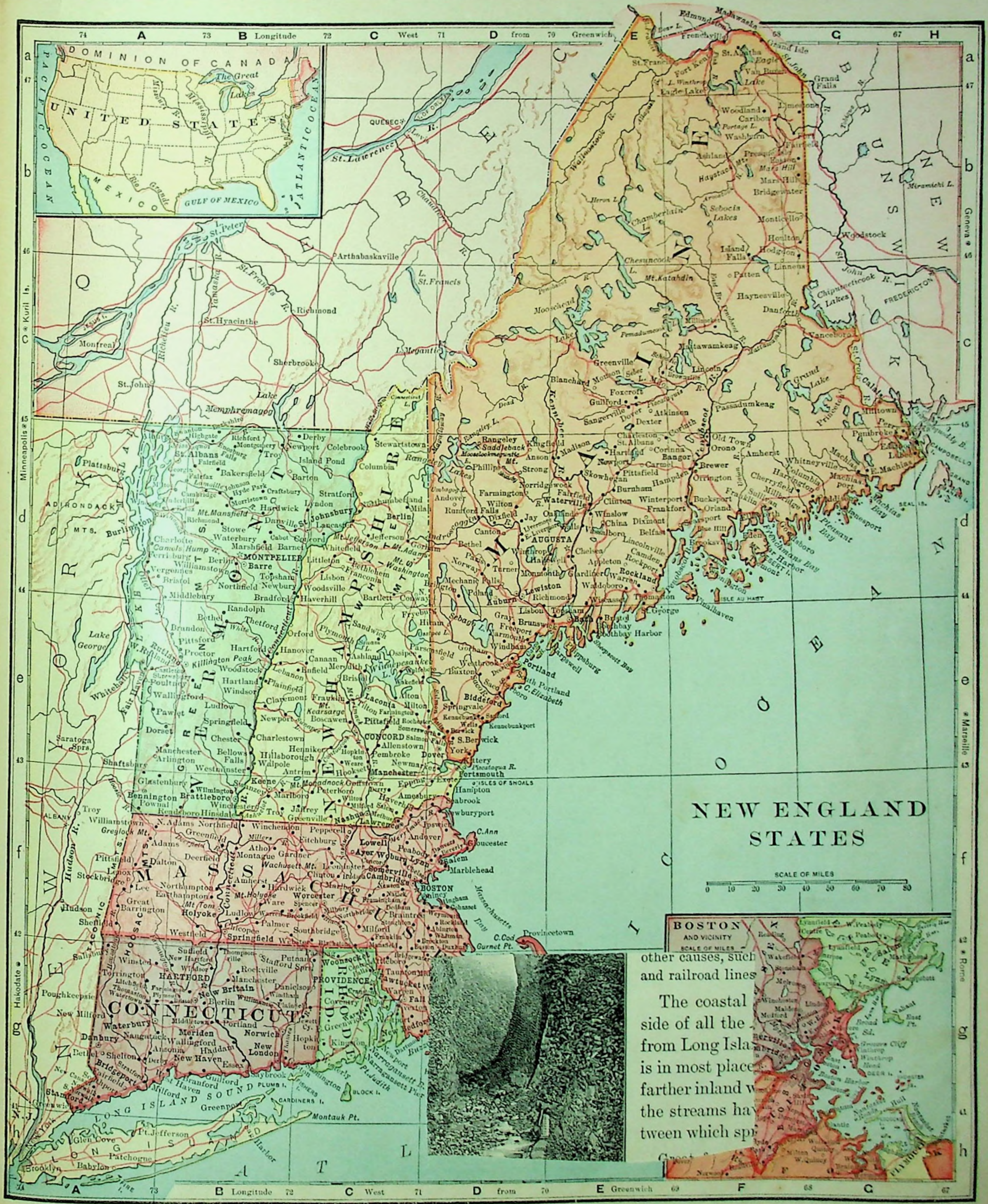
[1] Strictly speaking, the *right* bank of the Connecticut river, as well as of the Potomac, is the legal boundary line between the states on either side.

[2] The best time to fix in memory the location of a place is *when learning some important or interesting fact* about it. The mind is then active towards the particular place, and can therefore memorize with less effort. For this reason teachers should train pupils to the habit of looking up the location of each city, state, country or natural feature as its name occurs in the text.



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This city was settled by colonists from Massachusetts and others direct from England.

Hartford, the capital, is at the head of steamboat navigation on the Connecticut river. This city is well known for its large insurance business.

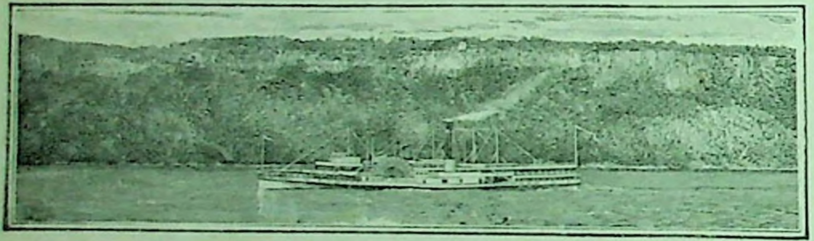
Bridgeport is a manufacturing city on Long Island sound. **Waterbury** is famous for brass manufactures. Its best known articles are watches, clocks and pins.

Meriden leads in the manufacture of silver-plated and britannia ware.

MIDDLE ATLANTIC STATES

62. New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, West Virginia

The surface of this group of states may be studied in four belts running northeast and southwest. First there is the mountain belt for a backbone; along the west side of the mountains extends the Allegheny plateau; on the east of the mountains is the rough foothill region (often called *piedmont*, meaning *foothills*), in the highest part of the Atlantic slope; along the coast and reaching to the foothill region is the true coastal plain, quite low and level.



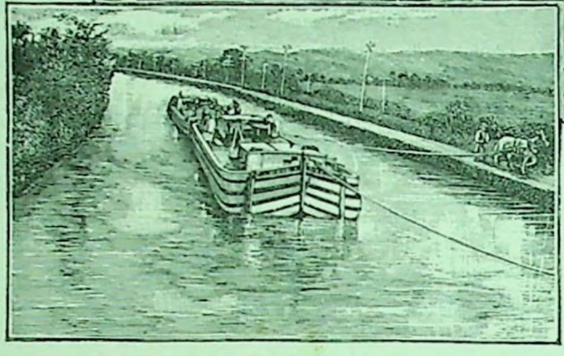
Palisades of the Hudson

The winter climate of the Middle Atlantic states is severe in the north, but milder towards the south. Virginia borders on the warm belt. The rainfall in this group of states is bountiful.

The Adirondacks are cut off from the rest of the Appalachian highland by the valley of the Mohawk river on the south, and the valley of lakes George and Champlain on the east.

The Mohawk valley is only about 100 miles long, but is one of the most important valleys in the world, as it opens a highway of trade through the Appalachians and connects the coast with the fertile prairies by way of the Great Lakes or railroad routes. This valley also made possible the digging of the Erie canal, nearly one hundred years ago. Both before and after railroads were built to reach the prairie states this canal carried immense amounts of freight, turning it chiefly to New York, thus helping to give this city the lead in commerce. Later the railroad lines along this valley turned down the Hudson to New York. The New York Barge canal, wider and deeper than the Erie canal, and in places following a different route, now connects the Great Lakes and the Hudson.

New York and Brooklyn



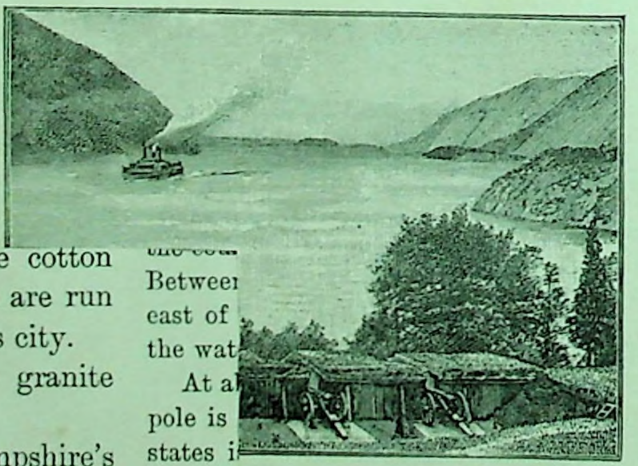
Erie canal

The lake valley on the east of the Adirondacks forms a highway northward, but not so important as the Mohawk valley, because the northern lands are not nearly so productive as the western. Both these valleys unite with that of the Hudson river. During past ages this river has cut a deep gorge. Its bluffs, called *palisades*, are famous for their beauty. The Hudson valley has settled so that the tides are felt far up the navigable part of the river.

Railroads are now the principal means of trade between the coast and the inland country. They pass the highland, not only through the Hudson-Mohawk valley, but also over more rugged regions farther south, giving more direct routes of trade westward from Philadelphia, Baltimore and other cities.

The most valuable part of the Appalachian highland in these states consists of the many parallel ridges forming the Allegheny mountains, reaching southwest through Pennsylvania, Maryland, West Virginia and the extreme west of Virginia.

Most of the Allegheny mountains were first formed as long folds, one of which is shown on page 9. Some of these folds remain, but most of them have been greatly worn by rain and streams. Many layers of rock once buried have been laid bare by the wearing away of layers above them. It is in such deep layers, brought nearer the surface by the folding and the wearing away by water, that many of the richest beds of coal and of iron ore are found in these states. The Allegheny mountains are one of the richest fields for iron ore and coal in the world.



Hudson gorge, West Point

The Blue ridge in Virginia is higher than the Allegheny ridges and has fewer useful minerals. West of the Blue

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Manchester has extensive cotton
river. Some of the mills are run
tives also are made in this city.
is well known for the granite
ts vicinity.
nly seaport on New Hampshire's
United States navy yard is situ-
, opposite Portsmouth.
t, the "Green mountain state," was
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ridge is a long valley, part of which is known as the Shenandoah valley. It is noted for its beauty and the richness of its soil.

Most of the Shenandoah valley has been worn in soft limestone. Water slowly dissolves this rock and forms caves or caverns. There are many places in the Appalachian highland where limestone caves are made. The caverns of Luray, in the Shenandoah valley, are among the most beautiful. Mammoth cave, in Kentucky, was formed in the same way and is much larger.

The roofs of caves sometimes fall in, making deep gorges; or a small part of the roof may remain standing in the form of an arch. The Natural Bridge, shown in one of the pictures below, is in the long valley west of the Blue ridge. This rocky arch is over 200 feet high; it was once part of the roof of a cave.

The Allegheny plateau includes all the portion of these states west of the Allegheny mountains, and reaches eastward across northern Pennsylvania and southern New York as far as the Catskill mountains. *See map on page 70.*

ALLEGHENY PLATEAU W. VA.

Typical scene in the Allegheny plateau, west of the Allegheny mountains

The many streams flowing across the Allegheny plateau to join the Ohio river have cut hundreds of deep valleys, making travel very difficult except in the valleys themselves. Most of the higher parts of this plateau are heavily forested. One of the pictures on this page gives an excellent view of the plateau region in West Virginia.

The rocky layers of the plateau contain rich beds of soft coal and iron ore. The many valleys cut by streams expose these valuable beds on the slopes, so that they can be easily found and mined. Petroleum and natural gas abound, greatly favoring manufactures in the western part of this group of states.

Natural Bridge, Virginia

Along the east side of the Blue ridge and the lower ranges farther northeast lies the foothill region. It is the belt where the mountains gradually descend to hills, and these to the coastal plain farther east. The foothill region, as its name implies, is rough, but its upland farms and river valleys are very fertile, yielding large crops of tobacco, grain and fruits.

Limestone caverns in Virginia

Along the line where the foothill region blends with the smoother coastal plain there are falls and rapids that give fine water power. This line where the two regions join is called the *fall-line*. It extends from the Hudson river, along the inner edge of the coastal plain to and around the southern end of the Appalachians, and has exerted much influence in developing manufactures. It is also the line which marks the head of navigation and the beginning of deeper tide water in many of the larger sluggish rivers of the coastal plain. *See picture of fall-line on page 99.*

Along the fall-line have grown many great cities, such as Trenton, Baltimore, Richmond and Petersburg, in this group of states, as well as many in the states farther south. These cities, of course, owe their growth largely to other causes, such as their positions on harbors and railroad lines.

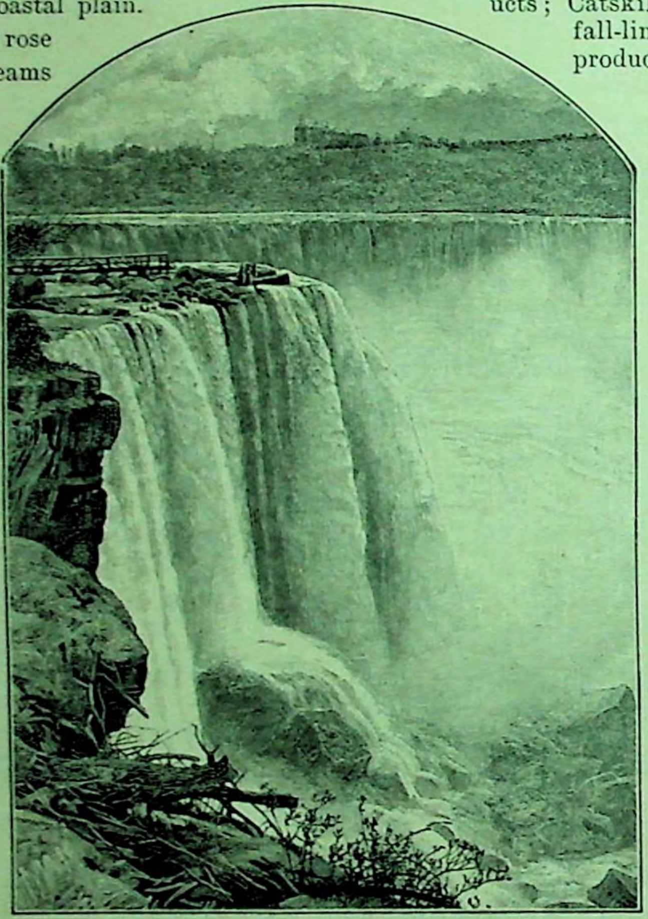
The coastal plain crosses the eastern side of all the Atlantic states southward from Long Island. The part near the sea is in most places very low and level; but farther inland where the plains rise higher the streams have cut deeper valleys, between which spread broad fertile uplands.

Great forests cover parts of the Atlantic slope. Other parts in this group of states produce peaches, apples and other fruits.

One of the finest peanut regions in the world reaches from the James river, Virginia, southward into North Carolina. The foothill region, or piedmont, in these two states is famous for its fine apples.

It is very difficult to make roads in many parts of the coastal plain where the soil is clayey or sandy. Some of the clay is made into fine pottery, and some of the sand makes excellent glass.

In lesson 6 we learned that coastal plains are smooth sea-bottoms lifted up to form dry land; this means that the sea once stood over the land that now forms the Atlantic coastal plain. The old shore line was where the *fall-line* now lies along the lower edge of the foothill region. Many shells of creatures that can live only in the salt sea water are found in the coastal plain.



Falls of Niagara

For a long time after the sea-bottom rose to form the coastal plain the rain and streams wore valleys in its surface. Then for some reason the lower part of the plain settled again under the sea and let the salt water flow into some of the valleys, making fine bays, such as Chesapeake, Delaware and New York bays. These arms of the sea are of great value in commerce, and near their heads have grown up the great cities of New York, Philadelphia and Baltimore. Near the entrance of the Chesapeake is also the deep and sheltered harbor of Norfolk.

In some parts of the coastal plain are great swamps covering hundreds of square miles. Cypress trees thrive in many of the swamps. One of the pictures on page 98 shows part of the *Dismal swamp*, southwest of the entrance to Chesapeake bay. This swamp is partly in Virginia and partly in North Carolina.

The many beautiful lakes in New York state were nearly all formed in the same way as those of New England, by the blocking of valleys with gravel and sand left by the ice sheet when it melted back. The largest of these lakes, *Oneida*, *Cayuga* and *Seneca*, as well as the river *Mohawk*, were given the names of tribes of fierce and warlike Indians that long held the Mohawk valley and the region farther west towards lake Erie.

Between western New York and Canada the Niagara river forms the outlet of lake Erie. This river flows over a high cliff, making the grand falls of Niagara.

Long ago Niagara river fell over a bluff much nearer lake Ontario than at present, but the stream has slowly cut a deep gorge back six miles into this bluff. Niagara Falls are about three fourths of a mile wide and more than 150 feet high. Below the falls the river rushes through its long gorge, making rapids of great size and beauty.

The rock under the falls consists of layers of limestone resting on softer rock. From time to time, as the lower rock is worn back at its front under the falls, huge masses of limestone break off and plunge down into the gorge, thus moving the falls slowly back upstream. The river must have worked thousands of years to form this great gorge.

A small part of the water of Niagara river is led aside and made to turn great water wheels that run machines making electricity. This is carried along wires to many of the cities and towns of western New York and there used to light streets and buildings, as well as to run electric cars or supply power to engines in mills and workshops.

The Welland canal carries vessels between lakes Erie and Ontario, avoiding the Niagara river. This canal is in Canada.

Topics: — States of this group; four natural regions; climate; Adirondacks; Mohawk valley; valley east of Adirondacks; Hudson valley; railroad routes inland from coast; Allegheny mountains and products; Blue ridge; valley of Virginia west of Blue ridge; caves and Natural Bridge; Allegheny plateau and products; Catskills; foothill region east of Blue ridge; fall-line; cities on fall-line; coastal plain and products; swamps; canals; bays, how formed; seaports near bays; lakes in New York; Niagara river and falls; Niagara water power; Welland canal; summary of products in these states.

Map Studies: — Name the Middle Atlantic states. Which state of this group borders on New England? Between what states is lake Champlain?

Which of the states of this group are on the seacoast? Name two lakes and a large river on the northwest.

What large island south of Connecticut is part of New York state? Name two states separated by the Delaware river; by Delaware bay. What capital is on Delaware river? Where is Philadelphia? What lake forms part of the northwest border of Pennsylvania?

Into what two states does Chesapeake bay enter? Name a capital and another large city on arms of this bay. What large river flows into the northern end of Chesapeake bay. In which state does this river rise, and across what state does it flow? What capital is on the Susquehanna river?

What states are partly separated from Maryland by the Potomac river?[1] What capital is on this river? On what river is the capital of Virginia? The capital of West Virginia? What two rivers unite at Pittsburg to form the Ohio river?

Where is Niagara river? What long canal crosses New York state from Buffalo? What waters does it connect? Along what branch of the Hudson river does part of this canal extend? What river joins the Barge canal with the sea? Where does this river rise? What capital city is on its right bank? Name a great city at the mouth of the Hudson. Brooklyn now forms part of the city of New York; locate Brooklyn.

Across which part of the Middle Atlantic states does the Appalachian highland extend? In what direction? Name two groups of mountains in New York belonging to the Appalachian highland. Which state is crossed by the Blue ridge? Name a branch of the Potomac that flows in a long valley along the western foot of this range.

What general name is given to many small mountain ridges that enter Pennsylvania from the two Virginias? In what general direction do they extend?

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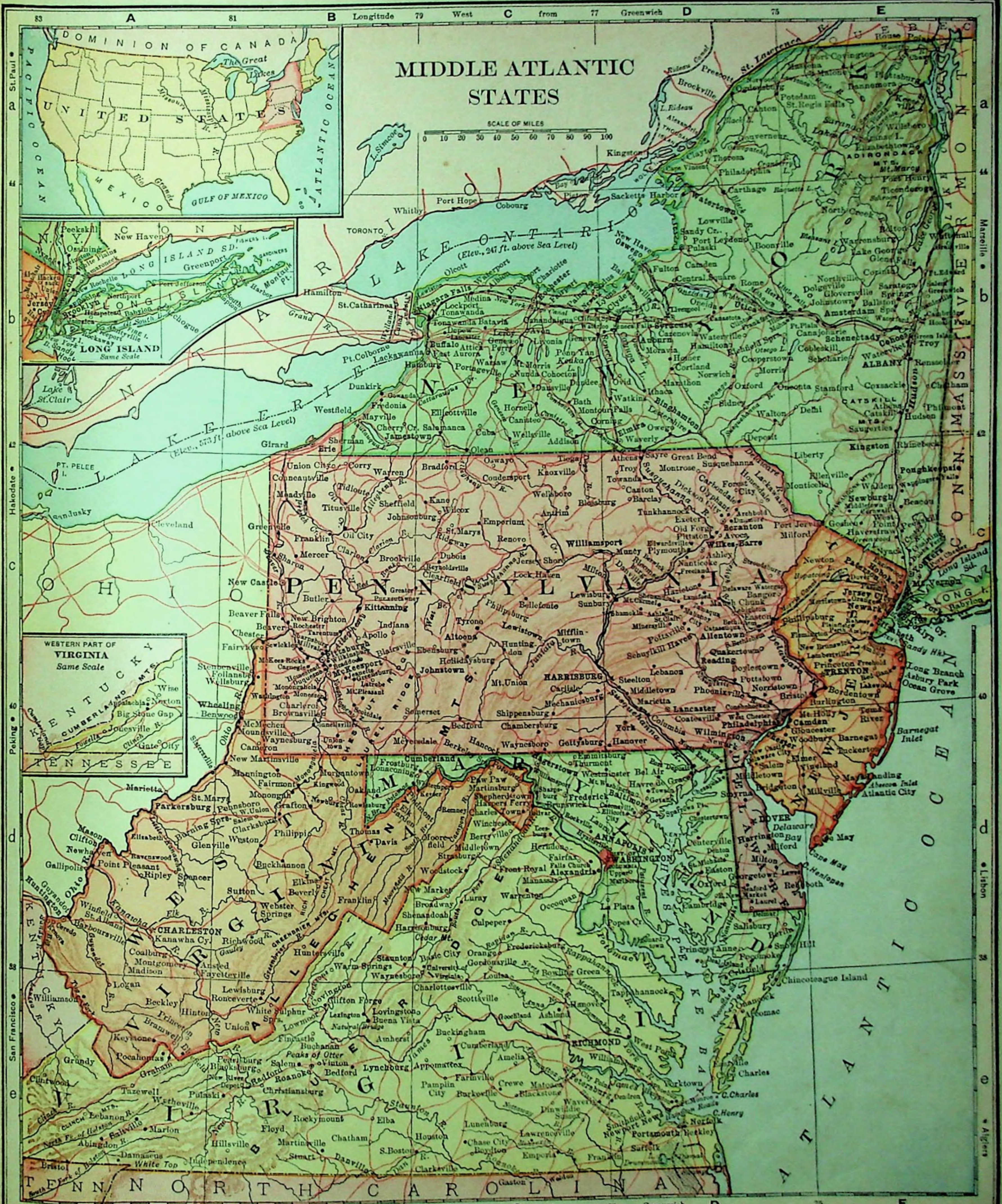
[1] See footnote on page 90.



MIDDLE ATLANTIC STATES

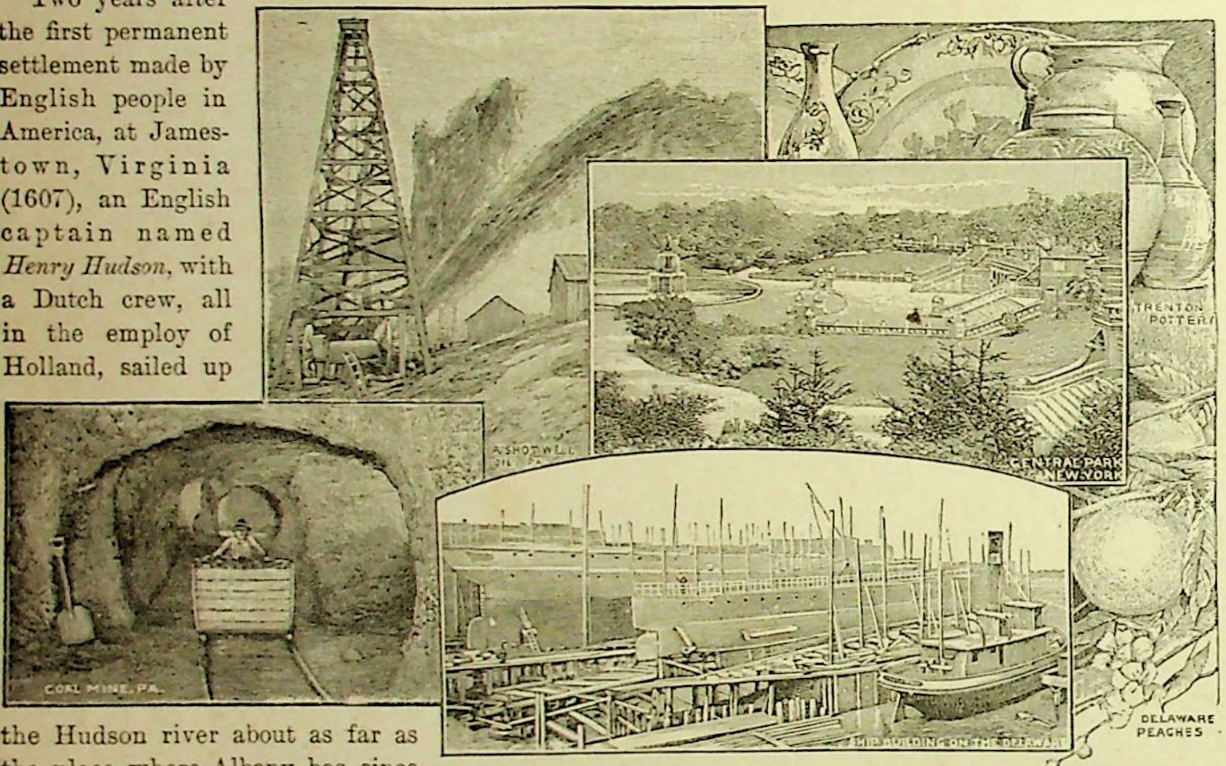
63. Cities of the Middle Atlantic States[1]

NOTE: — Before studying the cities in each state of this group, review what lesson 62 tells about its surface, climate and products; examine also maps of lessons 43 to 58 and learn what you can of its industries.

NEW YORK. **New York** is the second city in population in the world. More than 5,000,000 people live in this city.

The city of New York now consists of five sections called *boroughs:* the boroughs of Manhattan and Bronx, which correspond with the old city of New York, the borough of Brooklyn, the borough of Queens and the borough of Richmond.

Two years after the first permanent settlement made by English people in America, at Jamestown, Virginia (1607), an English captain named *Henry Hudson*, with a Dutch crew, all in the employ of Holland, sailed up the Hudson river about as far as the place where Albany has since been built. Several years afterwards the Dutch built a fort on the upper Hudson, near Albany, and later sent a colony that settled on Manhattan island, where part of the city of New York now stands, but where at that time there was only a small trading post. Dutch settlers also crossed to Long Island and laid out farms where Brooklyn has since grown up.



England, however, claimed these lands settled by the Dutch, because English sailors had gone along the coast a few years after the first voyage of Columbus to the New World. The stronger nation won, and the English flag was raised over the colonies.

New York, like all the other great Atlantic seaports, is joined with the interior by several trunk lines of railroads. This city carries on more than half the foreign trade of our country.

The chief exports from New York are meats, cotton, copper, petroleum, wheat and flour. Most of these are sent to Great Britain and other countries of Europe.

The principal imports of New York are cloth from England, France and other countries of Europe; coffee from Brazil and other parts of tropical America; cane sugar from the West Indies; tin plate from England; rubber from Brazil; tea from China and Japan.

New York is the greatest manufacturing center in America. The total value of the manufactures of this city is greater than that of all imports into our country.

The great value and variety of the articles made in this city may be judged from the fact that there are more than one hundred industries each of which yields products ranging in value from $1,000,000 to nearly $150,000,000 each year. The most important manufactures are various articles of clothing, books, cigars, leather goods and furniture. More books, magazines and newspapers are published in New York than in any other city of the New World.

New York and Jersey City prepare great quantities of meat for home and foreign markets.

Columbia University is in the city of New York. This city also has great libraries and art galleries.

Brooklyn, a borough of New York city, contains about 2,000,000 people. This borough is joined to the borough of Manhattan by three great suspension bridges (*see picture of one of them on page 92*).

A fourth great bridge joins the boroughs of Manhattan and Queens.

In the refining of sugar Brooklyn ranks first in the country. The roasting and grinding of coffee and spices are important industries. Brooklyn contains a United States navy yard. It has dry docks and other facilities for shipbuilding.

Buffalo has grown to be a large city, because it has a fine harbor on lake Erie, is at one end of the Barge canal and is an important railroad center.

Great quantities of western products pass through Buffalo. Its principal manufactures are iron goods, lumber and flour. Meat packing is here an extensive industry. This is one of the cities using power generated in the electric works near the falls of Niagara.

Rochester and **Syracuse** are on the Barge canal and the New York Central railroad. Rochester has various manufactories, among which are large flouring mills. Syracuse is famous for the salt works near the city.

Albany, the capital, is an important railroad center and is near the head of tide water in the Hudson. The state capitol is one of the finest buildings in the world.

The United States Military Academy, the government school for training young Americans to become army officers, is at **West Point**. Cornell University is at **Ithaca**.

PENNSYLVANIA. **Philadelphia** has a fine harbor on the tidal portion of the Delaware river.

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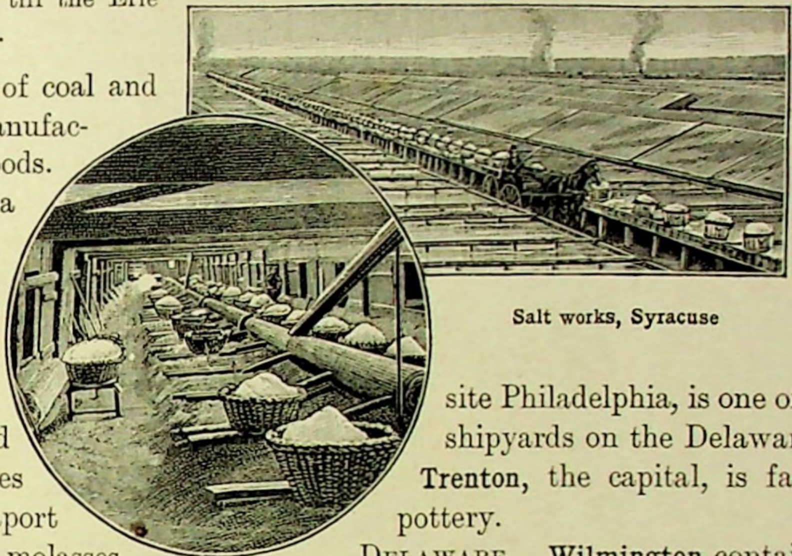
[1] See footnote 2, on page 90, and footnote 1, on page 89.

This city was founded by the famous Quaker, *William Penn,* and the word *Pennsylvania* means *Penn's woods.* The Quakers had ideas about religion that did not agree with all the teachings of the English church. For this they were persecuted. Penn wished to make a home for them where they would be free. He therefore bought land from the English king and sent out colonists. His city of Philadelphia (meaning *city of brotherly love*) grew to be the largest city in all the country and remained so till the Erie canal turned so much western trade to New York.

Philadelphia is not far from rich mines of coal and of iron ore; this city exports coal and manufactures great quantities of iron and steel goods. More locomotives are made in Philadelphia than in any other city.



Salt works, Syracuse

One of the best wool-producing districts extends across this state and into Ohio; Philadelphia now leads the world in making woolen carpets. There are large forests in northern Pennsylvania, yielding good bark for tanning leather; many tanneries have been built in Philadelphia. This seaport refines great quantities of sugar and molasses.

There are great cotton mills and oil refineries in this city. Along the river front in and near Philadelphia are immense shipyards.

The foreign trade of Philadelphia is very large. The city ranks third in population among American cities.

The University of Pennsylvania is in Philadelphia. Here also is the famous Independence Hall, in which the Declaration of Independence was signed, and where may still be seen the old bell that first rang out the news that the Declaration had been passed.

Harrisburg, on the Susquehanna, is the state capital.

Pittsburgh's leading industry is the manufacture of iron and steel goods. Among these are locomotives, steel rails, car wheels, and armor plate for ships of war.

Excellent sandstone for glass-making is found in the Ohio valley, and Pittsburgh is famous for its glassware.

This city is near oil wells and coal mines, and has a large trade in soft coal and in petroleum.

The former city of Allegheny is now a part of the great city of Pittsburgh. This city has a large trade with other river ports down the Ohio.

Scranton, Reading and **Erie** have large iron works.

Baltimore city and harbor

New Jersey. **Newark,** the largest city in New Jersey, has great tanneries. Patent leather is a leading product. Large quantities of jewelry also are made in Newark.

Jersey City forms an important part of the *port* of New York. Many ocean steamers sail from the Jersey City side of the harbor, because they can there meet the freighted trains from several railroad lines that do not enter the city of New York.

Paterson has the largest silk factories in the United States.

Camden, opposite Philadelphia, is one of the cities having shipyards on the Delaware.

Trenton, the capital, is famous for its fine pottery.

Delaware. **Wilmington** contains more than one third of the population of the state. The chief manufactures of the city are leather and cars.

The canning and packing of fruit form the leading industry of **Dover,** the capital of Delaware.

Maryland. **Baltimore** is on a fine harbor about forty miles from the head of Chesapeake bay. The foreign commerce of this city has grown rapidly in recent years.

Baltimore is almost surrounded by fruit districts. It is a leading market for the large tobacco crop of Maryland and other states further south. The long grain belt from lake Ontario to Chesapeake bay includes the country around Baltimore. This bay supplies more oysters than are taken from any other equal area in the world.

With these natural advantages, Baltimore takes high rank in the canning and shipping of fruit and oysters, and in the manufacture of tobacco articles and flour.

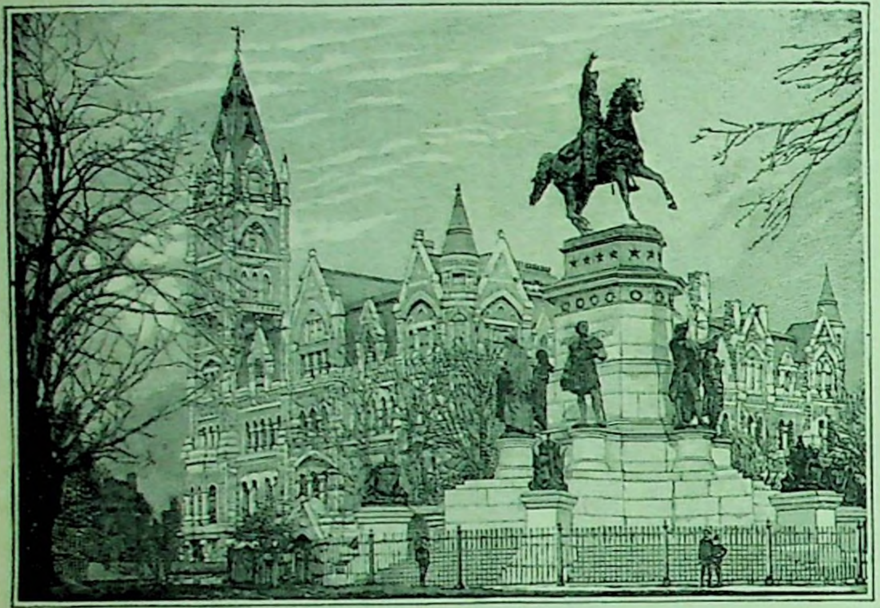
Johns Hopkins University is in this city.

We have seen that the Puritans and the Quakers came to America to find freedom of worship. For the same purpose a colony of *Roman Catholics* left England and settled on the banks of the Potomac in Maryland. The colonists in Maryland not only found freedom of worship, but gave freedom to others who joined them.

The city of Baltimore is named in honor of the Lord Baltimore who originated the noble plan of this colony.

The United States Naval Academy, where young Americans are trained to become officers in the navy, is located at **Annapolis,** the capital of this state.

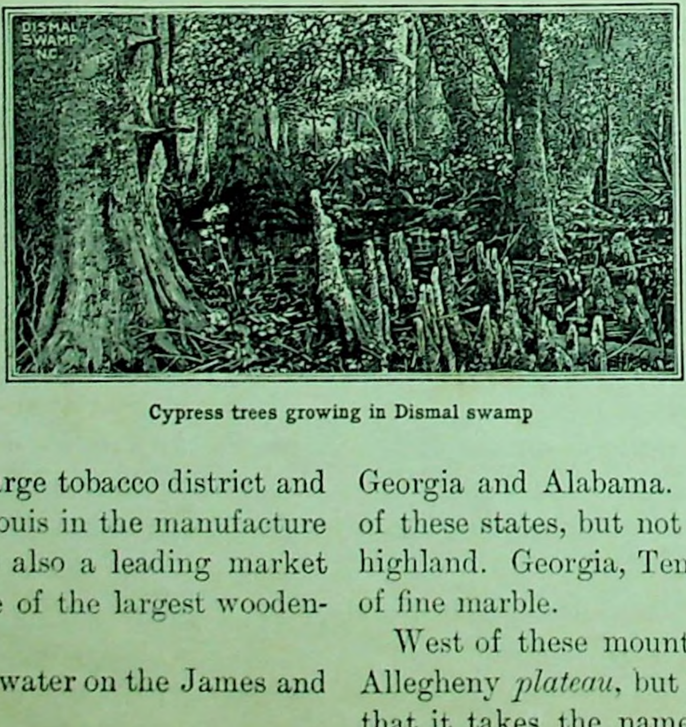
THE DISTRICT OF COLUMBIA. The site of the capital city of the United States was selected by General Washington, a few miles above Mt. Vernon, his home on the banks of the Potomac river. In order that the capital of the country might be free from all state control Maryland gave the land where the city of Washington has been built. This area is known as the *District of Columbia.* It is under the control of Congress, though to a body of citizens, known as *Commissioners,* is assigned the duty of managing its local affairs.



Washington Monument and City Hall, Richmond

Washington. Lesson 83 describes this city as the capital of the United States. It is noted for the magnificence of its public buildings, such as the capitol and the buildings devoted to the work of the different departments of the government. The building occupied by the National or Congressional Library is thought by many people to be the most beautiful in the world.

Washington is chiefly a city of residences and public offices. It is the seat of the Smithsonian and the Carnegie Institutions.



Cypress trees growing in Dismal swamp

VIRGINIA. **Richmond** is near a large tobacco district and ranks next to New York and St. Louis in the manufacture of tobacco articles. Richmond is also a leading market for leaf tobacco. This city has one of the largest woodenware factories in the world.

Richmond is at the head of tide water on the James and has an active coasting trade.

Richmond is the capital of a state that has given to the nation many famous patriots, for example, Washington, who commanded the army during the Revolutionary war, and Jefferson, who wrote the Declaration of Independence. Here Patrick Henry delivered his well-known speech for liberty. It was also the capital of the Confederacy during the Civil war.

Norfolk, the chief port of Virginia, ships great quantities of cotton, coal and lumber. There is a large United States navy yard on the harbor, opposite Norfolk, in Portsmouth.

Petersburg and **Lynchburg** are important tobacco markets. The former is the largest peanut market in the country.

Roanoke is the center of the coal and iron industry of the state. The University of Virginia is at **Charlottesville.**

WEST VIRGINIA. **Wheeling,** the largest city in the state, is in the long strip of land known as the *panhandle.* It is the center of the iron industry of the state.

Huntington is a coal and lumber market.

Parkersburg is in the center of the oil district in the western part of the state and has a large trade in both crude and refined petroleum.

Charleston is the capital.

SOUTHERN STATES,—EASTERN SECTION

64. North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Tennessee

The eastern section of the Southern states has regions similar to those of the Middle Atlantic group, but with much wider and more fertile coastal plains. It is in the warm half of the north temperate zone. These states receive heavy rainfall from moist winds that blow from over the gulf of Mexico. The summers are long and hot; the winters are short and mild, except along the northern border.

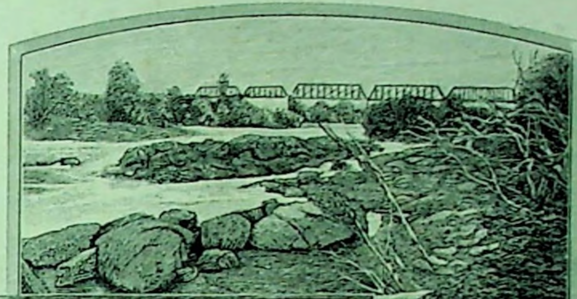
The Blue ridge crosses from Virginia into North Carolina. In the western part of the latter state rise the Black mountains, with Mt. Mitchell, the highest peak east of the Rocky mountains. Other lower ranges of the Appalachian highland occupy the western part of the Carolinas, eastern Tennessee and northern Georgia and Alabama. Gold is found in the mountains of these states, but not nearly so much as in the Western highland. Georgia, Tennessee and Alabama have quarries of fine marble.

West of these mountains lies the southern part of the Allegheny *plateau,* but it is here so deeply cut by streams that it takes the name of Cumberland *mountains.* The rich beds of iron ore and coal in this region are being rapidly developed, and many large iron foundries and mills have been built. Alabama and Tennessee take high rank as iron-producing states.

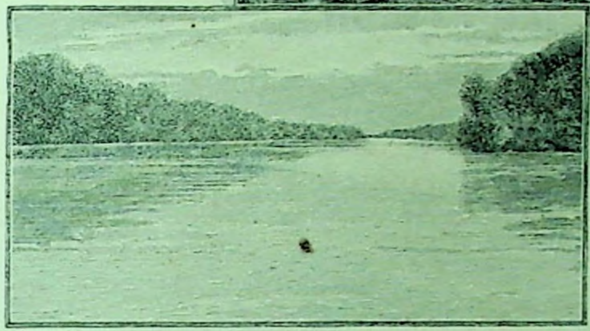
Around the southern and eastern sides of the Appalachian highland spreads the foothill region, as in the states farther north. This region is deeply cut by river valleys. Its soil is perfectly suited to the growth of cotton, long-leaf pine forests and fruits. The Carolinas and Tennessee have fine tobacco areas.

Cotton is the leading product of the soil in the Southern states. *See lesson 43.* In many cities of North Carolina, South Carolina, Georgia and Alabama there are cotton mills.

The western part of North Carolina produces apples that have no superior in the world. One of the best peach areas extends from the Mississippi river to the Atlantic coast and from the Ohio river to the Gulf.



The fall-line or head of navigation on the Roanoke



Lower course of the Roanoke

Along the lower edge of the foothill slopes runs the fall-line, giving fine water power to many cities. East and south of the foothills the coastal plain reaches to the sea.

As in Virginia and other states farther north, the inland portion of the coastal plain is somewhat rolling or hilly, being cut by streams; but the portion nearer the sea is low and in many places swampy.

Sand bars built by waves stretch along the coast and partly inclose many sounds. Inlets through the bars are kept open by currents caused by the ebb and flow of tides.

The shallow waters along the shore afford few landing places for large vessels, but good harbors are found in the river mouths or as far up the streams as strong tides are felt.

There are important oyster fisheries along the coast of all the Gulf states, from Florida to Texas.

The coastal plain spreads far up the Mississippi valley, to the mouth of the Ohio river. *See map on page 70.* The entire region, except the poorer coast lands and the forested areas, produces immense quantities of cotton. Corn is also a very important product in all these states. Tennessee and North Carolina raise large crops of wheat.

Nearly all parts of the Southern states were at one time wooded, and forests still cover the greater part of the region. The long-leaf pine is one of the most important lumber trees and also yields great quantities of naval stores, — turpentine, tar and rosin. *See lesson 33.* This is one of the principal lumber districts of the world. Around High Point, North Carolina, and in most of the large southern cities many furniture factories have been built.

The peninsula of Florida, lying between the gulf and the ocean, is formed mostly of coastal plain, but is also in part the work of coral polyps. The southern part of Florida contains a great swamp called the *Everglades*. Great areas of the swamp have been drained and turned into splendid farm land. The most extensive beds of phosphate rock in the world are found near the west coast of Florida. This rock is finely ground and used as a fertilizer. This state raises some of the best oranges and grapefruit in the world, as well as other tropical fruits and early vegetables.

The western part of Mississippi, especially the part drained by the Yazoo river, is in the low and fertile flood plain of the Mississippi river. The soil is fine and deep and yields immense crops of cotton and sugar cane. *See picture on page 78.*

Topics: — States in this group; four natural regions; climate; Blue ridge; Black mountains; Mt. Mitchell; which states have mountains; Allegheny plateau and its products; rivers draining Cumberland mountains; foothill region and its products; fall-line; coastal plain and its products; sand bars; Sea-island cotton; harbors; rice culture; coastal plain in Mississippi valley; cotton and forests in Southern states; naval stores; how Florida was formed; oranges; Everglades; how western part of Mississippi was formed; products of flood plain in Mississippi; summary of products in these states.

65. Cities of the Southern States, — Eastern Section[1]

NOTE: — Before studying the cities in each state of this group, review what lesson 64 tells about its surface, climate and products; examine also maps of lessons 43 to 58 and learn what you can of its products and industries.

Cattle in long-leaf pine forest of Gulf coastal pl

NORTH CAROLINA. **Wilmington** has a good harbor on the tidal waters of the Cape Fear river. The principal article of export is cotton from the uplands. Lumber, rosin and turpentine from the long-leaf pine forests of the broad coastal plain are also exported.

Raleigh, the capital, is in the cotton and tobacco district. This is one of the many southern cities having cotton mills.

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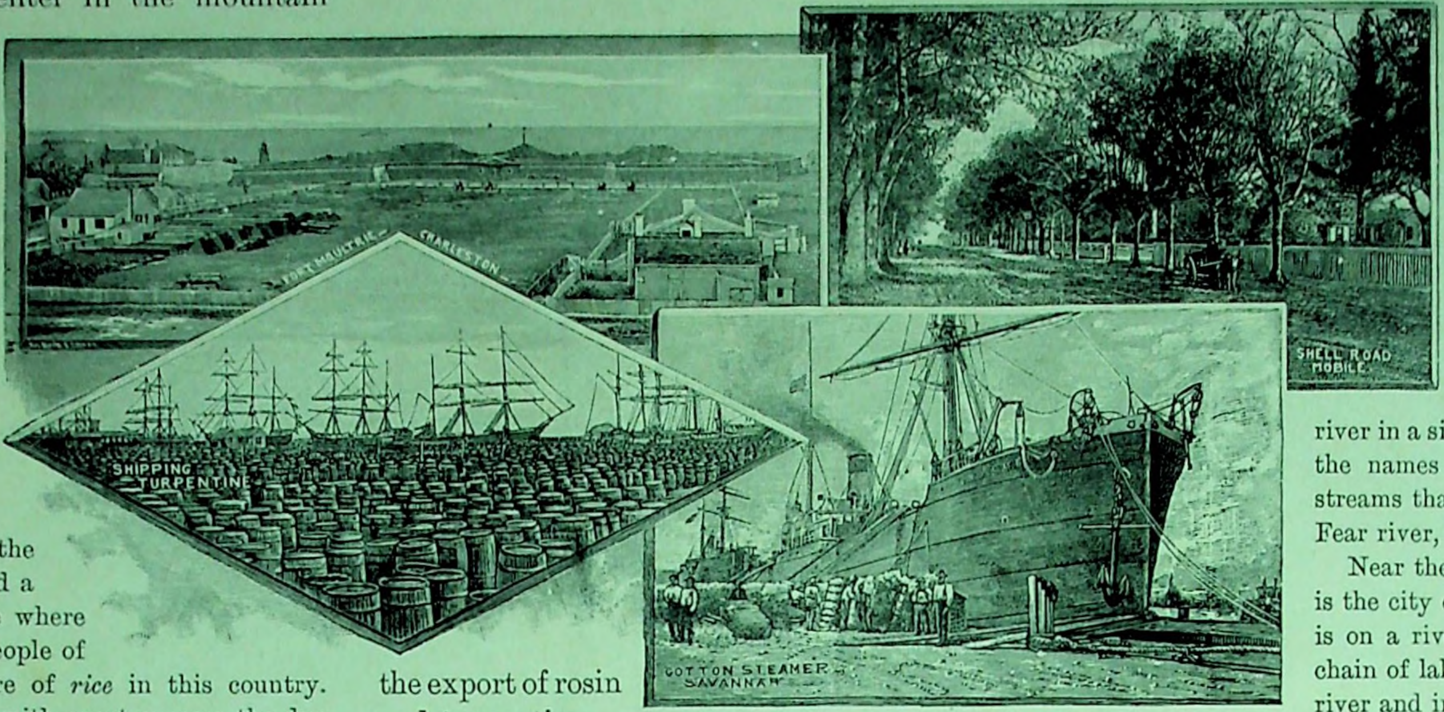
[1] See footnote 2, on page 90, and footnote 1, on page 89.

This city was named for the famous Englishman, *Sir Walter Raleigh*, who tried to plant colonies in *Carolina*, as the lands from Virginia almost to St. Augustine were once called.

Charlotte is the largest city in the state. It is an important railroad center and therefore a market for the products of the surrounding district. It has large cotton mills.

Asheville is a beautiful mountain resort and is an important trade center in the mountain district.



Durham and **Winston-Salem** are centers of a large tobacco trade.

SOUTH CAROLINA. **Charleston** has a fine harbor and is the chief seaport of South Carolina. Charleston takes high rank in the export of cotton and lumber.

Fifty years after the Pilgrims landed in Plymouth, an English colony settled near the present site of Charleston and a little later moved to the site where the city now stands. The people of this colony began the culture of *rice* in this country. Some years later they raised with great success the dye plant *indigo* and still later the *cotton* plant, which has now become the chief source of wealth in the South.

Near Charleston and in the river bottoms and marshy lands farther south is found a kind of rock known as *phosphate rock*. Here, as in Florida, large quantities of it are prepared for use as a fertilizer.

Columbia, the capital, is the railroad center of the state and the seat of the State University.

Spartanburg is the center of the cotton-manufacturing industry of the state. **Greenville** is a beautiful health resort.

GEORGIA. In **Atlanta,** the capital and largest city, several railroads from the Atlantic coastal plain meet others from the Mississippi valley. **This city is therefore a trade center for nearly all kinds of southern products.** Atlanta has extensive cotton mills.

Stone mountain, near this city, is a mountain of granite. Near it are many granite quarries.

Savannah is the oldest city and principal port of the state of Georgia. It exports more cotton to foreign countries than any other city on the Atlantic coast. The city of Savannah has a large trade in cotton and lumber, and leads the world in the export of rosin and turpentine.

Savannah was founded by an English colony the year after Washington was born.

Augusta, Macon and **Columbus** are not only important markets for southern products, but they also have large cotton mills. **Valdosta** is the largest inland market for Sea-island cotton.

FLORIDA. **Jacksonville** is the largest city and chief railroad center in Florida. It has a large trade in naval stores, lumber and oranges.

Tampa is the second city in size and the most important gulf port in the state.

Key West is on a coral island. The chief manufacture in this city and Tampa is cigars made of Cuban tobacco.

(*Continued on page 102.*)

Map Studies: — What state is next south of Virginia? Name the Southern states on the Atlantic coast; along the coast of the gulf of Mexico, east of the Mississippi river. Which state of this group has no seacoast? Which of these states lie along the Mississippi?

Which part of this group of states consists of coastal plains? *See map on page 70.* In what general direction does this plain slope?

What waters partly surround Florida? On the coast of which state are Albemarle and Pamlico sounds? Where is cape Hatteras? What great swamp is partly in Virginia and partly in North Carolina? *See picture on page 98.* Name a large river flowing from Virginia into North Carolina and entering Albemarle sound.

NOTE: — Many rivers in the South receive different names for the parts that flow in different states, and often for parts of the same river in a single state. For example, see the names of the upper parts of the streams that reach **the sea as** the Cape Fear river, the Peedee and the Santee.

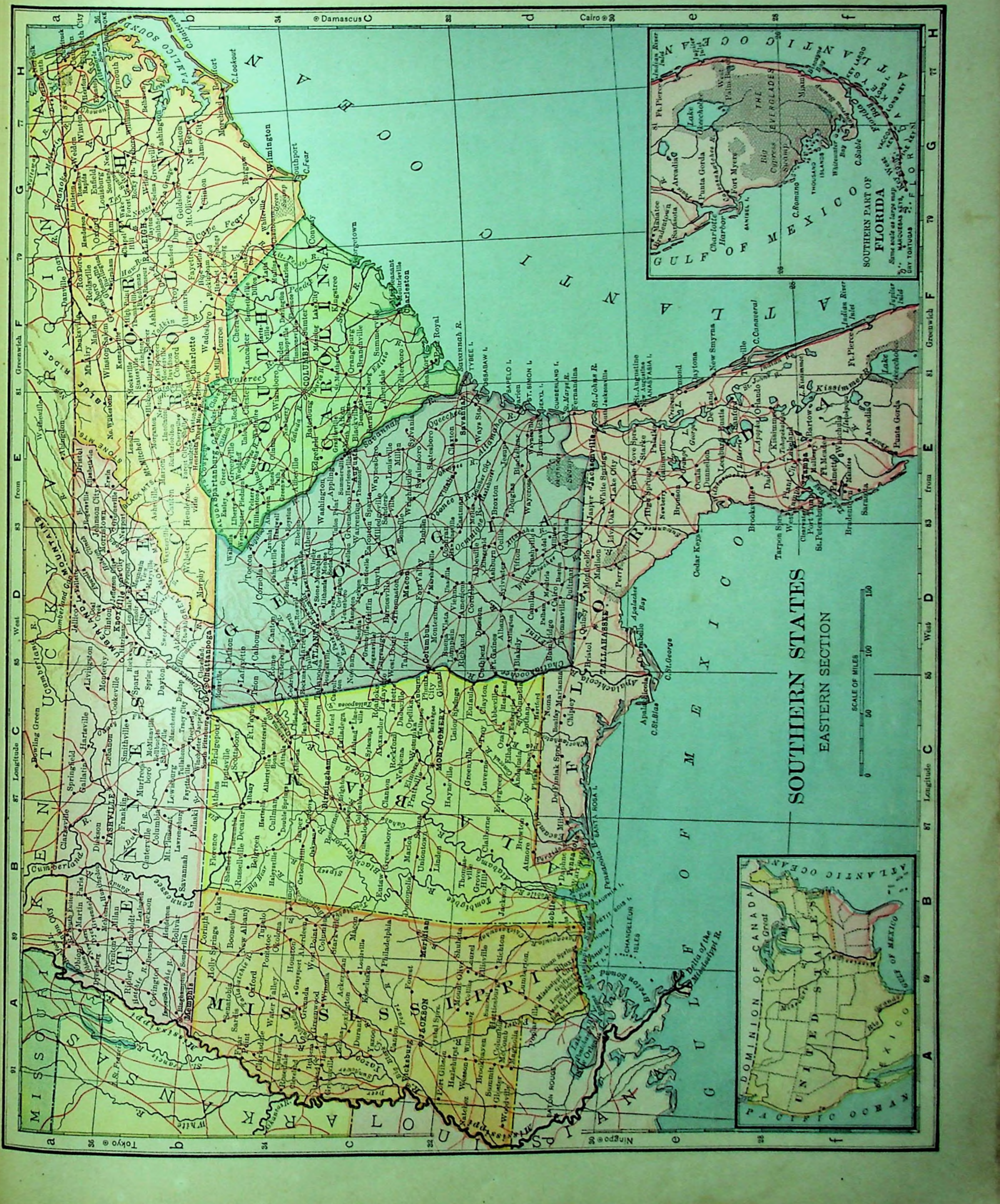
Near the broad mouth of what river is the city of Savannah? Jacksonville is on a river that consists largely of a chain of lakes; what is the name of the river and in what general direction does it flow? Where is lake Okechobee?

To what great bodies of water do the rivers of Georgia flow? What capital is on the Alabama river? What bay does this stream enter?

Which part of this group of states is mountainous? To what highland do the mountains belong? What "ridge" of mountains is partly in Virginia and partly in North Carolina? Where are the Black mountains? What high peak is in this range? Which parts of Georgia and Alabama are mountainous?

In what general direction do the rivers of the Atlantic slope flow? Those of the Gulf slope? Those of northern Alabama and Tennessee? What great river enters northern Alabama and then returns to Tennessee?

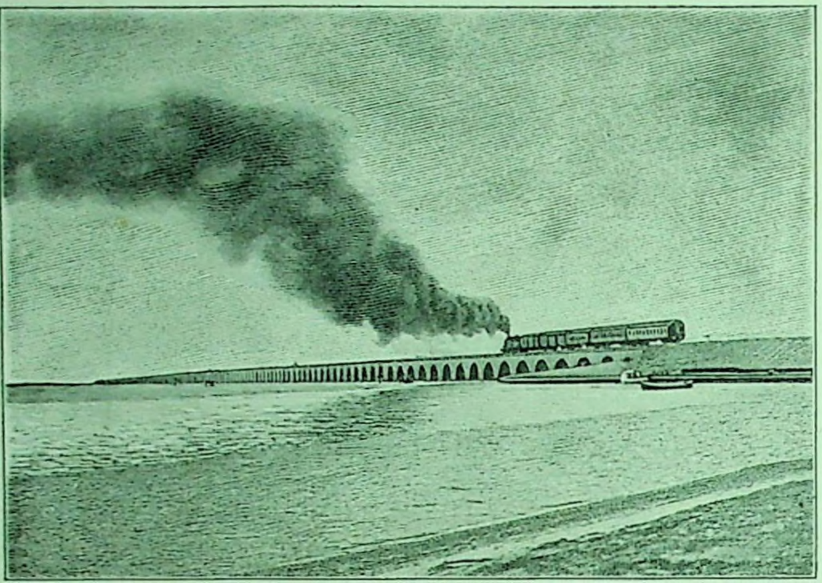
Where are **the Cumberland** mountains? On what **river is the capital of Tennessee?**


SOUTHERN STATES

EASTERN SECTION

Sponges are shipped from the port of Key West. It is a United States naval station.

Key West is on one of a long chain of islands or "keys" curving westward from the southern end of Florida. Out over these keys, and bridging the wide water spaces between, a railroad has been built. This was a daring and difficult work. Passengers can now cross by rail from the mainland to Key West and there connect with steamers for Cuba.


Train crossing one of the many bridges or viaducts on the railroad joining Key West with the mainland of Florida

Tallahassee is the capital of Florida.

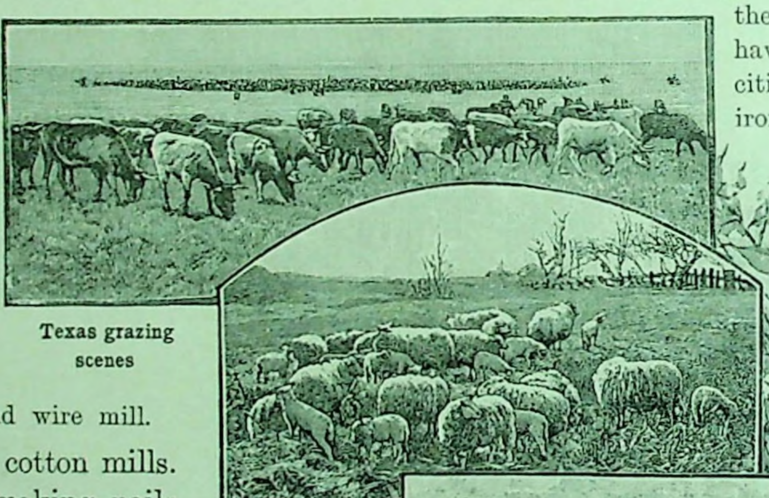
Pensacola, the third city in size, exports cotton and lumber. A United States navy yard is located near this port.

St. Augustine, founded in 1565 by the Spanish, is the oldest town in the United States.

ALABAMA. **Mobile**, at the head of Mobile bay, is the principal port and forms the outlet for a great portion of the cotton and the lumber products of the state. There are large lumber mills in this city.

Birmingham is the largest city. It is situated in the coal and iron district near the southern end of the Appalachians. This city has extensive manufactures of iron and steel. Steel rails are a leading product.

The Birmingham district is one of the great iron and steel manufacturing districts of the country. Iron ore, coal and limestone are there found within short distances of one another. In addition to huge blast furnaces and foundries, the Birmingham district has the largest steel mill in the South. At Fairfield, just outside of Birmingham, is a large nail and wire mill.


Texas grazing scenes

Anniston has foundries, pipe plants and cotton mills. **Gadsden** has car works and a steel mill making nails and wire.

Huntsville and **Selma** are two of the many cities having cotton mills. The former takes the lead in cotton manufacturing in the state.

Montgomery, the capital, has a large trade in cotton.

MISSISSIPPI. **Vicksburg** is one of the trade centers that have been built on the bluffs of the Mississippi. This city is one of the important cotton markets on the great river.

Natchez, farther downstream, is another city making large shipments of cotton.

Jackson and **Meridian** are the largest cities. The former is the capital and an important trade center. The latter ships much of the cotton of the eastern part of the state.

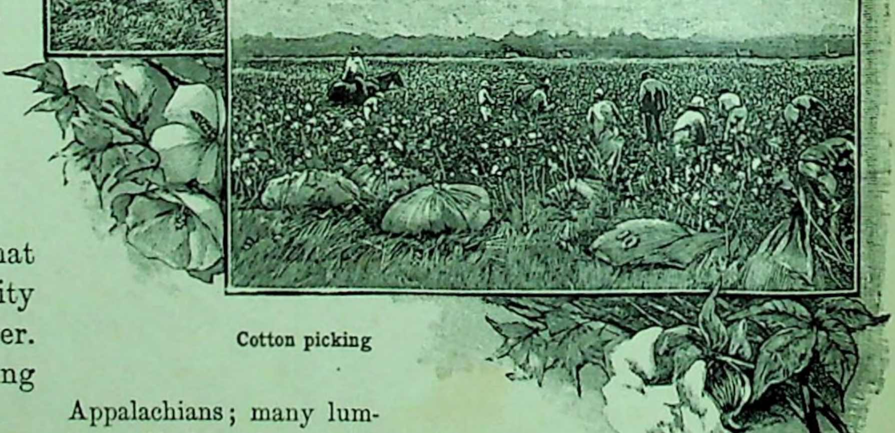
TENNESSEE. **Nashville**, the capital, is in a region where both wheat and tobacco are produced. Large areas in Tennessee are covered with forests. Nashville is a market for wheat, lumber and tobacco.

Memphis is the largest cotton market in the state and the most important river port between St. Louis and New Orleans. Memphis is also a railroad center. Much of the cotton sent from this city goes by rail to New York or to other cities in the northeast part of our country, where there are many cotton mills.

Chattanooga, like Birmingham, is in the coal and iron district near the southern end of the Appalachian highland. Iron and steel goods are the chief manufactures in both these cities.

Knoxville is the most important trade center in the northeastern part of Tennessee.

Every state in the South has a modern system of public schools, — both rural and graded city schools. There are also many high, technical, art and normal schools, colleges and universities. Since the Civil War, cotton mills have been built in scores of cities in the cotton belt; iron and steel mills have rapidly increased round the southern end of the Appalachians; many lumber mills have been built to prepare the forest products for domestic and foreign trade; much larger areas have been devoted to fruits, early vegetables and other agricultural products. The railroad and steamship service has been greatly increased. Perhaps the most marked gain has been made in iron and cotton manufactures.


Cotton picking

SOUTHERN STATES,—WESTERN SECTION

66. Louisiana, Texas, Arkansas, Oklahoma

The western section of the Southern states slopes mainly from the Rocky mountain district towards the Mississippi river and gulf of Mexico. Its climate is that of the warm part of the north temperate zone.

Small ranges of the Rocky mountains enter the extreme western part of Texas, but most of the northwest part of that great state is in the dry Western plains.

Texas contains the southern end of these plains. This part consists of a high and dry plateau, called the *Staked plain* (or *Llano Estacado*, as the Spanish explorers named it).

In summer hot southwest winds often blow from over the Staked plain. They are dry and parching and do much injury to crops in their path.

Millions of cattle graze on the Staked plain in Texas and on a broad belt of grassy land east of it. East of these grazing lands are fertile prairies that yield large crops of cotton, corn and wheat. The flood plains or river bottoms of this state rank among the most fertile cotton lands in the world. Many sheep are found in southwest Texas.

East and south of the prairies lie broad coastal plains reaching to the gulf of Mexico. This portion of the state produces rice and sugar cane, chiefly in the eastern part. Early vegetables are sent from Texas to northern cities.

In Texas have been found some of the best oil lands. Natural gas also flows freely. The state has valuable coal mines, and some iron is mined. Large deposits of the rock called *cinnabar*, yielding quicksilver, have been found.

As a whole, the coast of Texas is shallow and lined with sand bars; but there is one excellent harbor, where the city of Galveston is built on an island at the entrance to Galveston bay, from which a ship canal leads to Houston.

The state of Louisiana consists largely of coastal plain, through which the rivers have cut channels and spread out flood plains and deltas. The northern half of the state is in the coastal plain. Its soil is well suited to the growth of cotton. The rich lands along the rivers produce immense crops of sugar cane and rice. Louisiana and Texas surpass all other states in the production of rice. Louisiana produces more sugar cane than any other state.

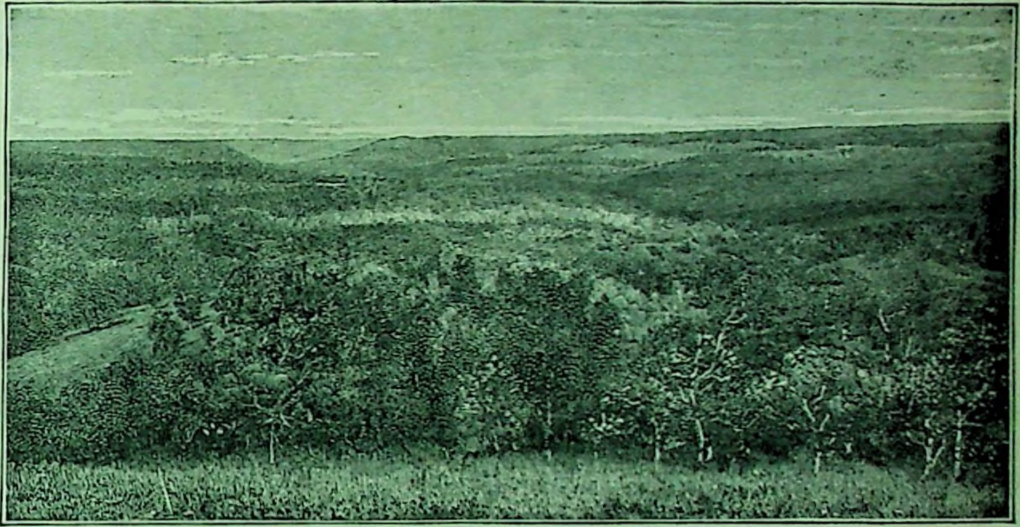
A large part of southern Louisiana is delta land made by the Mississippi. To a large extent this region is covered with river branches, swamps, lakes and bays. Many costly canals have been dug to drain off the surplus water.

More than a fourth of all the sulphur used in the world comes from porous rock deeply buried under Louisiana. Here are also found large quantities of petroleum and natural gas, as well as vast beds of salt.

Below the mouth of the Ohio river the Mississippi has cut a broad valley in the coastal plain and has spread out a flood plain on the valley floor, from thirty to fifty miles wide. For about a thousand miles the Mississippi river winds through the great flood plain which is bordered on the east and west by bluffs.

When heavy spring rains fall and snow melts in the north, the great river overflows parts of its lowland far and wide. In times of flood the river deposits more silt near the main channel than farther away, and the surface of the flood plain therefore slopes gently *away from* the river.

For this reason the small rivers coming from the upland turn down the valley, near the bluffs. One of these rivers, the Yazoo, is shown on the relief map on page 70.



Typical view of low mountain region extending from southwest Missouri into Arkansas

Banks of earth, called *levees*, have been built for hundreds of miles along the great river, to keep the rising water from flooding the fields. In times of heavy floods the levees were formerly often broken; and as the flood plain slopes away from the river, the lowlands were quickly flooded. Thousands of acres of cotton, sugar cane and grain were then destroyed. Such accidents are now very rare. A break in the levee is called a *crevasse*.

Villages on the flood plain are often built close along the river banks, where there is the least danger from floods, because the highest parts of the flood plain are near the stream.

In the flood plain the Mississippi river flows in long bends or loops. Year after year the river wears away the necks of the loops, now and then cutting across one of them. Then the stream flows in its new channel, and the deserted part is left filled with standing water, forming a curved lagoon. Many lagoons on the wide flood plain show former courses of the river.

For ages the Mississippi river has carried down large quantities of soil and has thus built its flood plain far out into the gulf of Mexico, making a great delta.

In some places jetties or walls have been built out into the river to narrow the channel and thus make the water flow more swiftly. The swift stream then deepens the channel and makes it navigable. There are large jetties at the mouth of the Mississippi.

The low delta plain comprises thousands of square miles. Many parts are marshes and wooded swamps. Other parts are wide stretches of grass land. Many streams cross the delta, and a large number of lakes lie in shallow hollows between them. Between the mouths of the streams are salt bays that the river has not yet filled with soil.

Much of the eastern part of Arkansas is in the lowland or flood plain along the Mississippi. The soil is deep and rich and produces much cotton. Farther from the river the state rises in broad uplands, large parts of which are covered with valuable forests, but much cotton and rice are raised in the open lands. The western part of Arkansas has low mountain ridges, many of which are covered with forests.

Grass and grain thrive in most parts of the state, and many cattle and hogs are raised. Valuable pearls are taken from shellfish found in the streams of this state. Arkansas is noted for its fine apples and peaches.

The low mountain ridges of western Arkansas extend across parts of the state of Oklahoma. Other parts of Oklahoma are fertile prairies and produce much cotton, wheat and corn. There are also good grass lands for cattle. The eastern part of Oklahoma is heavily forested. The state has rich oil and gas wells and coal mines.

Topics: — States of this group; general slope; climate; extreme west and northwest part of Texas; Staked plain; Texas prairies and their products; coastal plain and products; underground products of Texas; surface of Louisiana; great rivers in this state; flood and delta plains and their products; underground products; describe fully flood plain of Mississippi; delta of Mississippi; surface of Arkansas; products of this state; surface of Oklahoma; products of Oklahoma; summary of products of these states.

67. Cities of Southern States, — Western Section[1]

NOTE: — Before studying the cities in each state of this group, review what lesson 66 tells about its surface, climate and products; examine also maps of lessons 43 to 58 and learn what you can of its industries.

LOUISIANA. **New Orleans** has railway connections with all important cities of the United States, and also an excellent harbor on the Mississippi river. This city has grown to be the largest center of trade in the Southern states. Sugar, molasses, rice and other products are brought to this great river port for shipment to home and foreign markets. Its foreign *export* trade surpasses that of every other city in the Union, except New York. New Orleans sends yearly to Europe cotton valued at more than $100,000,000. This city has also a very large trade in oil, wheat, leaf tobacco and lumber.

New Orleans has had rapid growth in manufactures. It takes high rank in the refining of sugar.

Shreveport, on the Red river, is in a rich cotton district and a natural gas and oil region.

River front in New Orleans

This city is the second cotton market in the state and is a thriving center of trade. Railroad lines connect it with New Orleans.

Baton Rouge, a river port, is the capital.

TEXAS. Texas is the largest state in the Union. Its area is greater than that of all the New England and Middle states together; it is three times as large as Great Britain.

Dallas and **Fort Worth** are in the northeastern part of the Texas prairies, — in a rich farming and grazing district. Both these cities handle great quantities of cotton, wheat and corn, and both have large flouring mills.

Dallas is a leading market for farming implements. Fort Worth has great stock yards. Many cattle are sent from this district to northern markets.

San Antonio is an important railroad center and has a large trade in southwest Texas.

San Antonio is famous in the history of Texas. Not long after the United States purchased the vast territory of Louisiana west of the Mississippi river, thousands of Americans crossed the border and settled in Texas, which was then a part of Mexico. Trouble arose between the Mexicans and the Americans; a war followed, and the Texans won the freedom of their state.

One of the fiercest struggles in this war took place in a building known as the *Alamo*, in San Antonio. Here a small band of Americans was attacked by a large force of Mexicans. The Americans fell fighting to the last, preferring death to surrender. Texas was soon afterwards admitted into the Union.

Galveston is the greatest cotton port in the world. Among its other exports are wheat and cottonseed products.

Houston is an important railroad center and is situated on the navigable *Buffalo bayou*. **Austin** is the capital.

(*Continued on page 106.*)

Map Studies: — What four states are in this section of the Southern states? What river partly separates the eastern section of Southern states from the western? In which state is the delta of this river?

Which part of this section has the highest land, as shown by the course of the rivers? What is the general direction of the slope? Where is the high plain known as the Staked plain?

What river flows between Texas and Oklahoma? Into what does this river flow? What states of this section are crossed by the Arkansas river? What country lies across the Rio Grande from Texas?

In what general direction do the rivers of Texas flow? Name two cities on the Trinity river. Into what bay does this river flow? What city is on an island at the entrance to this bay? On what river is the capital of Texas? What large river flows between the Colorado and the Trinity? What river forms the eastern boundary of Texas?

On what river are New Orleans and Baton Rouge? **On what river is Shreveport?**

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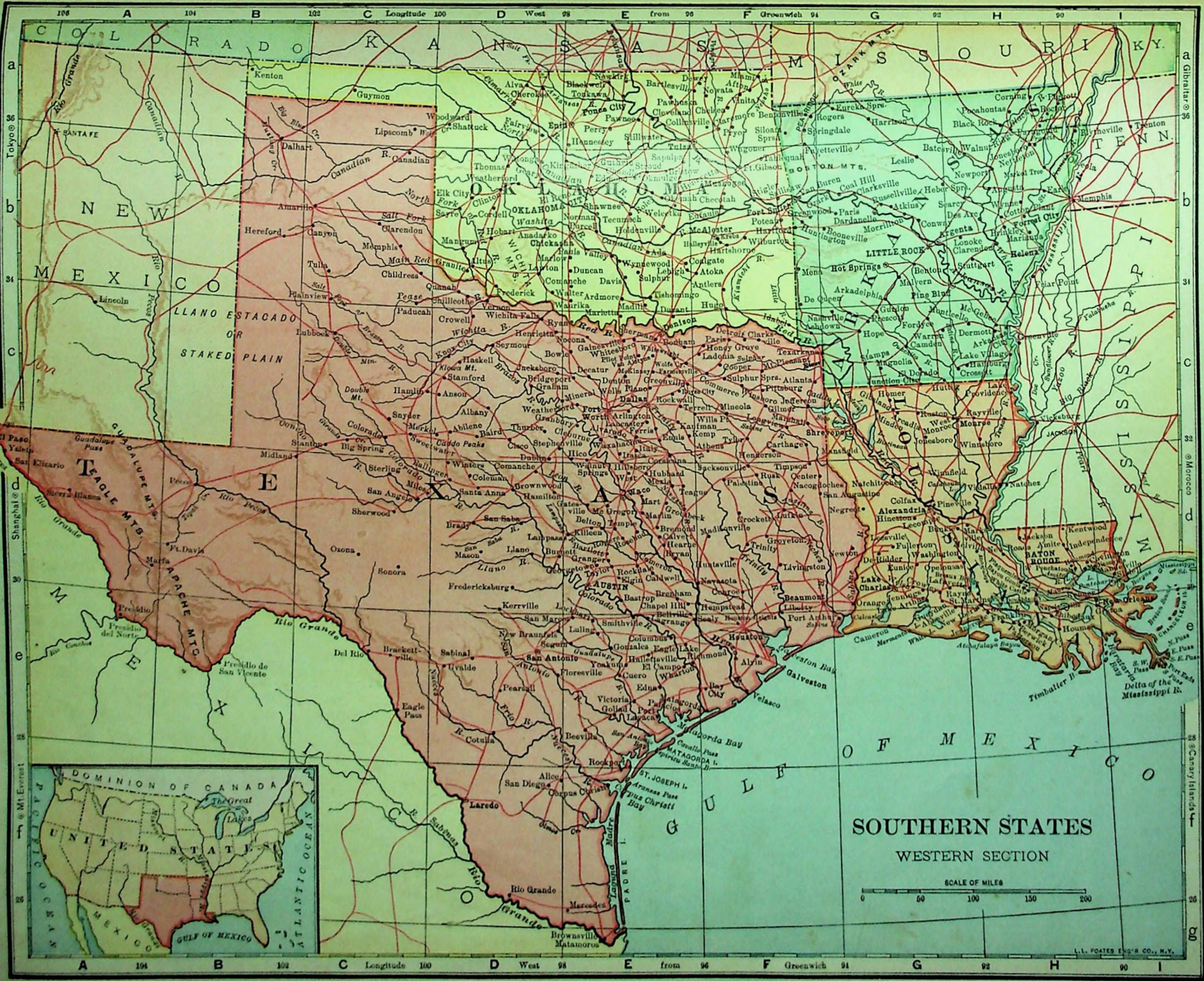
[1] See footnote 2, on page 90, and footnote 1, on page 89.



SOUTHERN STATES

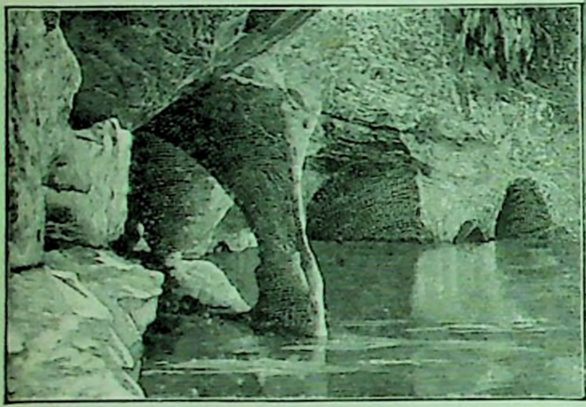
WESTERN SECTION

ARKANSAS. **Little Rock** is the capital and largest city in Arkansas. Large quantities of cottonseed oil and oil cake are made in this city.

Fort Smith is a manufacturing and trade center in the western part of the state. It is in a coal and natural-gas region. **Pine Bluff** is a river port for cotton and lumber.

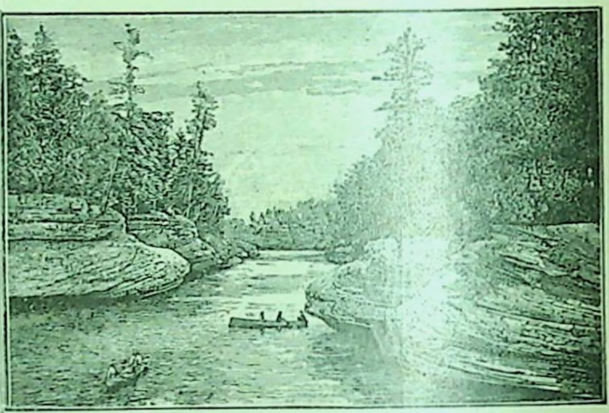
Hot Springs is a well-known resort for invalids. Its springs are famous.

OKLAHOMA. This state was made out of two territories, Oklahoma and Indian Territory. Long ago the latter was set apart by the national government as a home for the Cherokee, Creek and other Indians. They built large towns and had good schools. When the territories became a state, its growth was very rapid. This was due largely to the development of its oil, gas and coal fields, and to its farming and grazing lands. Forests cover much of the eastern part of the state, joining those of Arkansas.



Cliffs, lake Superior

Rock column, Dalles of the Wisconsin



Dalles of the Wisconsin

Oklahoma City is the capital and largest city. It is a railroad center in a rich farming and stock-raising region.

Muskogee, at the head of navigation on the Arkansas river, is a trade center near important oil and gas fields.

Tulsa is another distributing point for oil-well supplies, and **Enid** for agricultural supplies.

McAlester is the center of the coal-mining industry of the state. The map shows how many railroad lines run to all these cities.

CENTRAL STATES, — EASTERN SECTION

68. Ohio, Indiana, Illinois, Michigan, Wisconsin, Kentucky

The eastern section of the Central states includes the part of the prairie region east of the Mississippi, and on the southeast enters the Allegheny plateau. On the north the prairies give place to the hilly region round the upper Great Lakes.

The eastern parts of Ohio and Kentucky are in the Allegheny plateau and have rich deposits of iron ore and coal. Ohio yields great quantities of petroleum and natural gas. Illinois also produces much petroleum. The portion of the Allegheny plateau known as the Cumberland mountains extends from Tennessee into Kentucky.

With the exception of the upper lake district, this group of states, including most of Ohio and the northwest half of Kentucky, consists of prairies.

The level or rolling grassy prairies, the richest grain district in the world, reach to the Allegheny plateau on the east and to the dry Western plains on the west; on the south they adjoin the coastal plain that extends up the Mississippi valley to the mouth of the Ohio river; on the north they merge into the cold plains of northern Canada.

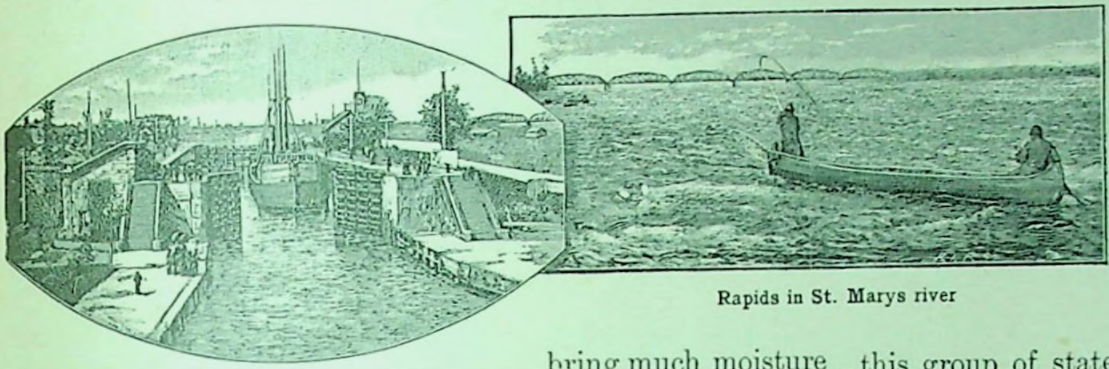
When first settled by white men the prairies were the grazing ground of countless buffaloes (or bison) and deer. There many tribes of Indians had built their villages and the "braves" hunted wild animals, while their "squaws" planted corn, the native grain. Few trees grew wild in the western portion of the prairies, except along the streams. Most of the region was a sea of grass, sometimes swept by fires covering hundreds of square miles.

Now all is changed. The deer have been killed or driven to the forest regions. Very few buffaloes survive, and even these are in small groups in the Western highland, where severe laws protect them from hunters. The vast grassy areas are divided into farms. Towns and cities spread over the land where the Indian villages stood. The farmhouses are surrounded by groves. In the grass lands where the red man hunted wild animals, the white man tends millions of cattle, sheep and horses. Where the savage carried to his tent the spoils of the chase, civilized man is busy with long trains of cars gathering up the wheat, the corn and the cattle, and shipping them to nearly all parts of the commercial world. In the place of the Indian runner who carried news of peace or war from one tribal village to another, long wires convey messages across the entire continent. And this marvelous change has mostly been made within the memory of men still living.

The early settlers found the soil over most of the prairies deep and rich. It was compact and hard, but after once being broken up it yielded readily to cultivation.

The prairie soils have been made in various ways: part as fine mud that settled on the bottoms of great lakes, since drained away; part by the decay of bed rock in the place where the soil still remains, — the slope being so gentle that the rock could decay to a great depth before even the surface soil was washed away; part as sand and gravel left in some places by the same great ice sheet that spread from New England far west and south of the Great Lakes.

The prairies are in the cooler half of the north temperate zone. Westerly winds blow over them, but they cannot bring much moisture from the Pacific ocean, far away over the broad Western highland. The rainfall of the prairies comes chiefly in the warm winds that move up the Mississippi valley, from the gulf of Mexico. The heaviest rains fall on the parts east of the Mississippi river; but for some distance west of the river there is plenty of rain for the grain crops. Still farther west, towards the dry Western plains, the crops often suffer in periods of drouth.


Lock in the "Soo" canal

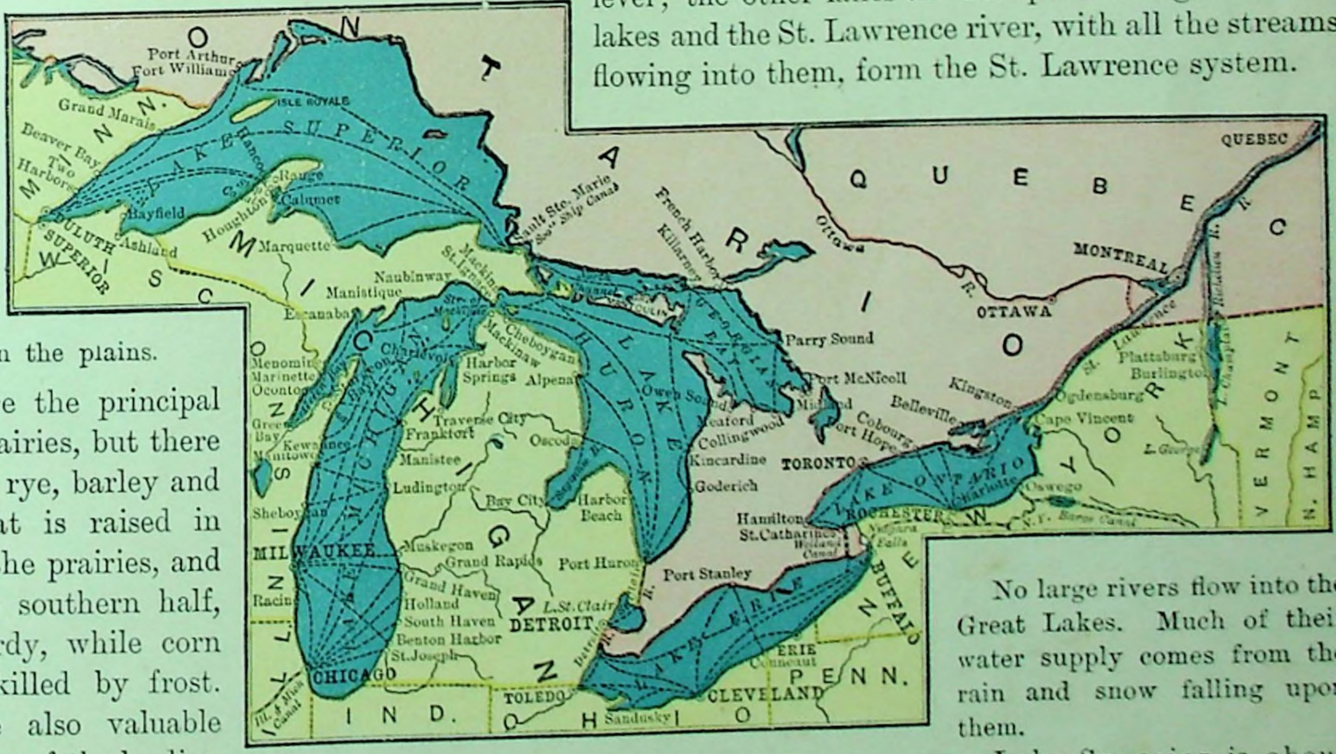
Rapids in St. Marys river

The summer rains of the prairies usually fall during thunderstorms. Great masses of clouds several miles high, generally moving eastward about as fast as a railroad train, give brief rains to belts of country from 50 to 200 miles wide, but leave dry regions on either side, until other storms come to water them.

Water sinks slowly into the compact soil of the prairies. Heavy rains therefore swell the streams. In the springtime, before the frozen soil has thawed, rains and melting snow often cause the rivers to spread far and wide over their flood plains. These floods do much damage, but they also leave coatings of fine fertile soil on the plains.

Wheat and corn are the principal grains raised in the prairies, but there are also large crops of rye, barley and oats. The most wheat is raised in the northern half of the prairies, and the most corn in the southern half, because wheat is hardy, while corn is easily injured or killed by frost. Oats and barley are also valuable crops. Kentucky is one of the leading states in the production of tobacco. Large quantities are raised also in other prairie states.

Many of the cattle and hogs in our country are raised on the prairies, where there is plenty of grass and corn for fattening them. This is also a good sheep region.



Steamer routes on the Great Lakes

Under large areas of the prairies there are beds yielding immense quantities of soft coal. This coal has been of great assistance in building up the prairie cities, as the region suffers from a scarcity of wood for fuel. Wisconsin and Illinois have rich zinc and lead mines.

Though the Central states have no seacoast, and therefore little foreign commerce, yet they have fine waterways for inland commerce on the Great Lakes and the Mississippi system. Moreover, most of the section is so level or so gently rolling that railroads are built at small expense.

One of the most important parts of this group of states is the region round the upper Great Lakes. Much of this region is heavily forested and is one of the best lumber districts in the world, though the trees have now been cut from large areas. It yields both soft woods and hard woods. The lumber has been of great value in building up the prairie towns and cities, and also in the manufacture of furniture, wagons and farming tools. The hard wood has also been used extensively in making flour barrels.

The richest iron mines in the world are near the south and west shores of lake Superior. The same part of Michigan is one of the richest copper districts yet found.

The Great Lakes are in broad hollows whose lower parts, except in lake Erie, are below sea level. The surface of lake Superior is about an eighth of a mile above sea level; the other lakes are not quite so high. These lakes and the St. Lawrence river, with all the streams flowing into them, form the St. Lawrence system.

No large rivers flow into the Great Lakes. Much of their water supply comes from the rain and snow falling upon them.

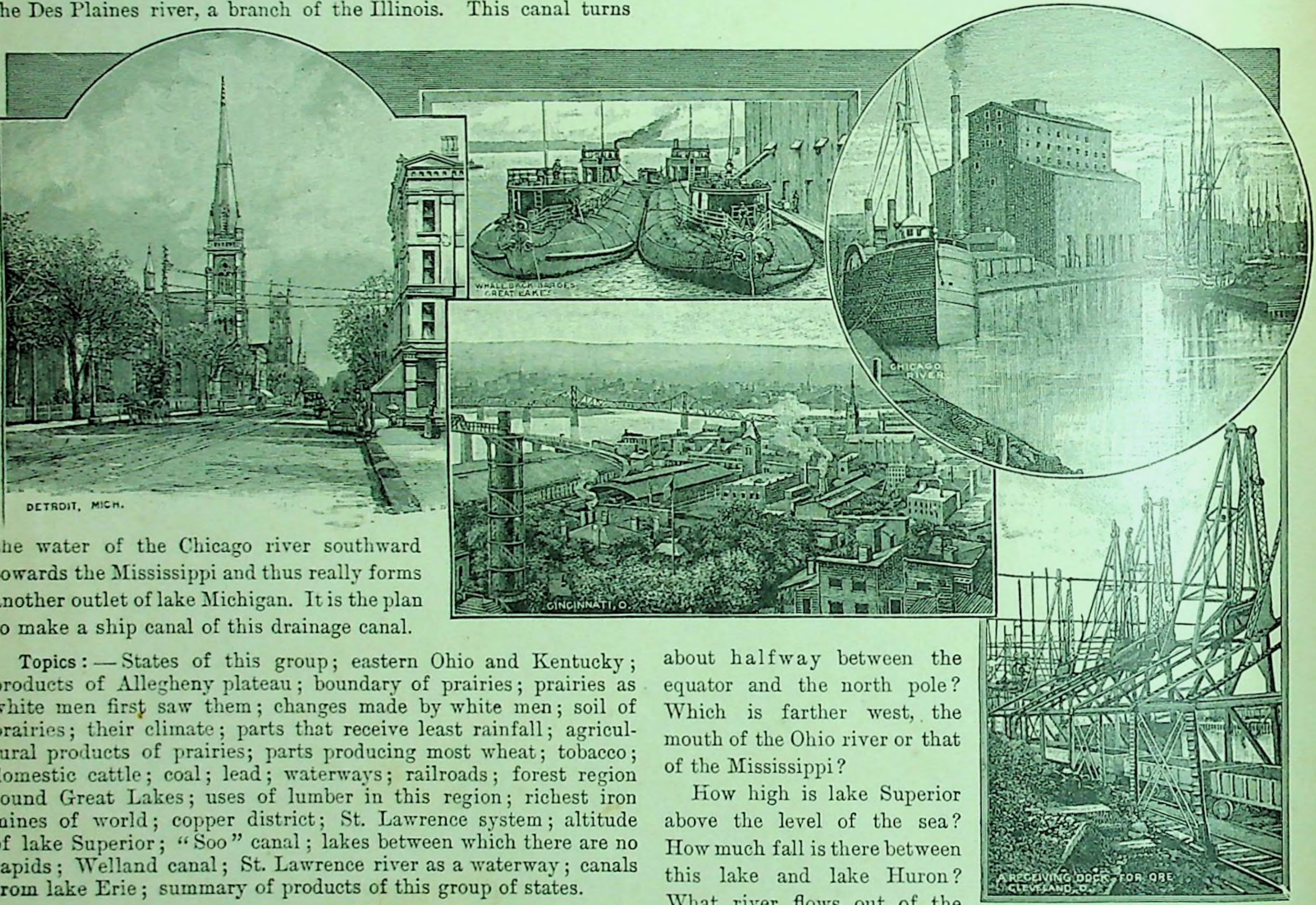
Lake Superior is about twenty feet higher than lake Huron. The outlet of the upper lake is called *St. Marys river*. It is about sixty miles long. This stream has rapids that are not navigable, but the "Soo" canal, which the national government has built past the rapids, allows vessels to pass from one lake to the other. A picture on page 107 shows a vessel ready to come from the canal lock. There is another canal on the Canadian side.

There are no rapids to prevent vessels from sailing freely between lakes Michigan, Huron and Erie; but between lakes Erie and Ontario there is a very steep descent in the Niagara river, at Niagara falls. What canal carries vessels between the last-named lakes?

From lake Ontario the St. Lawrence river forms a waterway to the sea. The river has rapids, but canals have been built past them. Going downstream some steamers pass over the rapids.

Another trade outlet from the Great Lakes is through the Barge canal. What does lesson 62 tell about this canal? There are also canals leading to the Ohio and Mississippi rivers.

A great drainage canal has been built from the Chicago river to the Des Plaines river, a branch of the Illinois. This canal turns the water of the Chicago river southward towards the Mississippi and thus really forms another outlet of lake Michigan. It is the plan to make a ship canal of this drainage canal.


DETROIT, MICH.
WHALEBACK BARGES GREAT LAKES
CHICAGO RIVER
CINCINNATI, O.
A RECEIVING DOCK FOR ORE CLEVELAND, O.

Topics: — States of this group; eastern Ohio and Kentucky; products of Allegheny plateau; boundary of prairies; prairies as white men first saw them; changes made by white men; soil of prairies; their climate; parts that receive least rainfall; agricultural products of prairies; parts producing most wheat; tobacco; domestic cattle; coal; lead; waterways; railroads; forest region round Great Lakes; uses of lumber in this region; richest iron mines of world; copper district; St. Lawrence system; altitude of lake Superior; "Soo" canal; lakes between which there are no rapids; Welland canal; St. Lawrence river as a waterway; canals from lake Erie; summary of products of this group of states.

69. Cities of the Central States, — Eastern Section[1]

NOTE: — Before studying the cities in each state of this group, review what lesson 68 tells about its surface, climate and products; examine also maps of lessons 43 to 58 and learn what you can of its industries.

OHIO. **Cleveland,** on lake Erie, is within easy reach of the coal fields of Ohio and Pennsylvania; of the oil districts in the same states; of the iron mines of the lake Superior region; of the soft-wood and the hard-wood forests of the states bordering on the Great Lakes.

With these advantages, Cleveland has become a leading city in iron and steel manufactures, in oil refining, in shipbuilding and in other great industries. Many steamers for the lake traffic are built in this city.

Cincinnati has more than twenty miles of front on the Ohio river, and nearly a score of railroad lines enter this city. It has therefore grown to be a center of trade for

(*Continued on page 110.*)

Map Studies: — Name the states of this group that border on the Great Lakes. Which are separated by the Ohio river? Which lie along the left bank of the Mississippi? Which of these states are about halfway between the equator and the north pole? Which is farther west, the mouth of the Ohio river or that of the Mississippi?

How high is lake Superior above the level of the sea? How much fall is there between this lake and lake Huron? What river flows out of the upper lake? How much fall is there between lakes Huron and Erie? What rivers and lake join these two lakes?

In what direction do most of the large streams of Ohio, Indiana and Illinois flow? Of Kentucky? Name two long branches of the Ohio river that enter Kentucky from Tennessee. Which of these branches rises in the Cumberland mountains in eastern Kentucky? What does lesson 64 tell about these mountains?

What four states are grouped round the southern part of lake Michigan? In which of these states is Chicago? Milwaukee?

What great city is connected with the Illinois river by a canal route? What is the course of the Wabash and Erie canal? What branch of this canal leads to Cincinnati? What city on lake Erie can be reached by this canal? What other large city on lake Erie is at the end of a canal joining this lake with the Ohio river?

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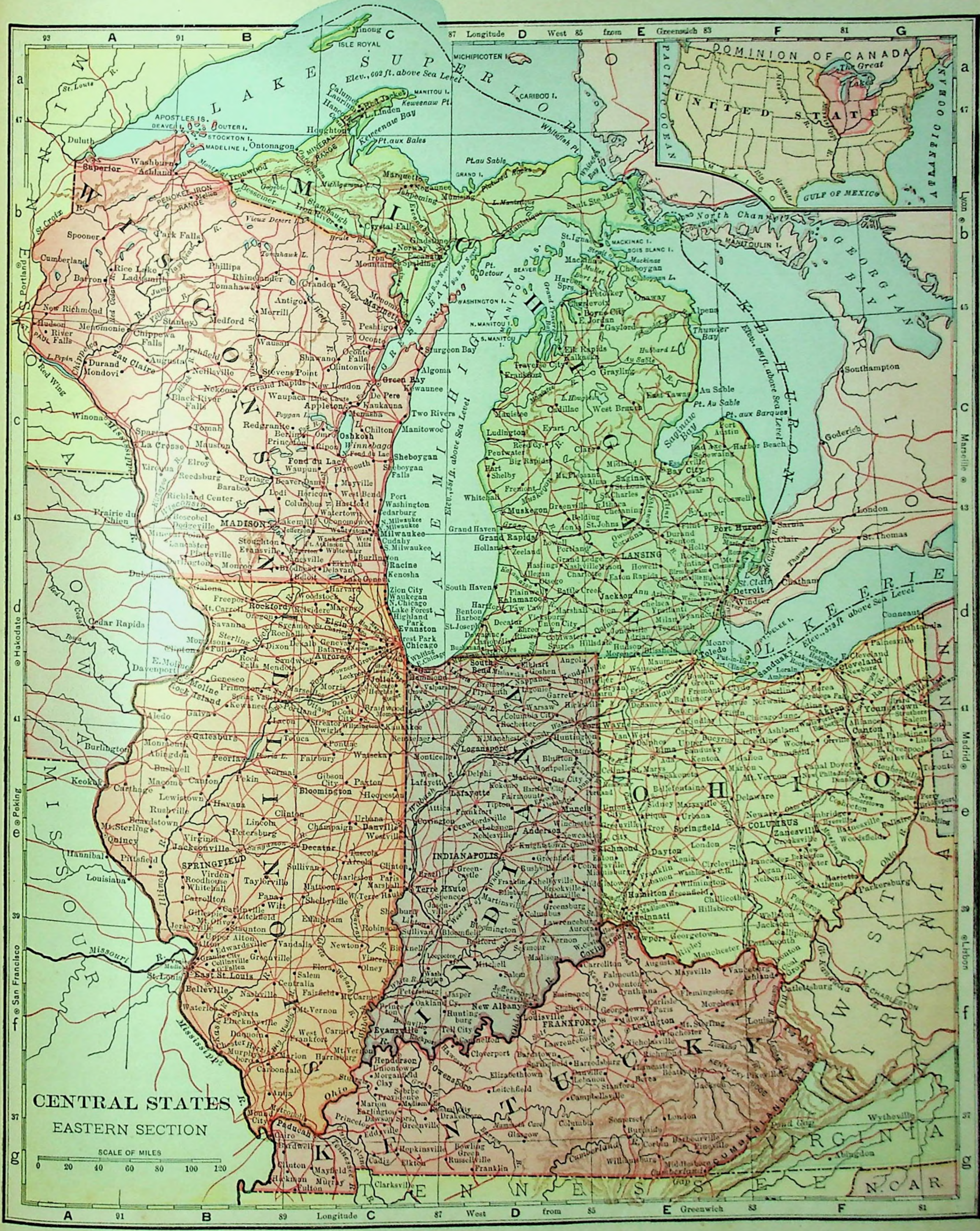
[1] See footnote 2, on page 90, and footnote 1, on page 89.



CENTRAL STATES
EASTERN SECTION

a great area of farming and grazing country. Important manufactures of Cincinnati are clothing, wagons, shoes and furniture. Many cattle and hogs are raised in the Ohio valley, and many of these are sold in Cincinnati. Meat packing and tanning are important industries. Many kinds of iron goods also are made here.

Columbus, the capital, is a trade center for middle Ohio. This city is noted for the manufacture of fine carriages.

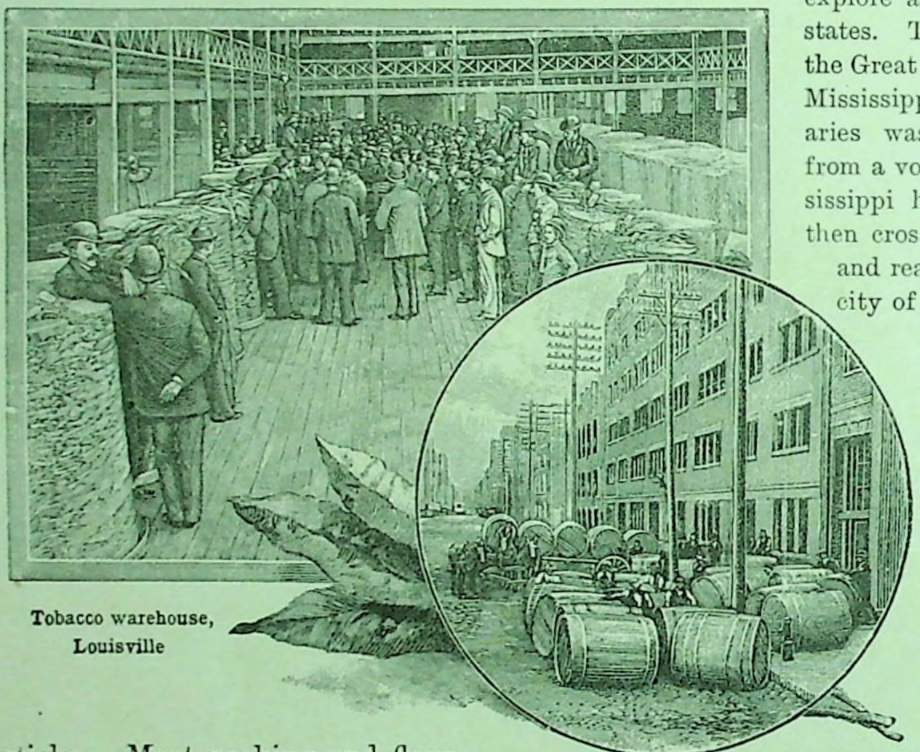
Toledo has several miles of docks and is a shipping point for grain, flour, iron ore, lumber and coal.

Dayton is the center of a fine farming region and is also an important manufacturing city.

Youngstown is a large center of iron manufactures. **Akron** is well known for its rubber goods, sewer pipes and pottery.

Farming tools are made in several of the large cities of this section. Among these are **Springfield** and **Canton**.

INDIANA. **Indianapolis** is the center of trade of the farming and grazing districts of Indiana. It is one of the largest inland railroad centers in the world. This city is a market for many of the products of the state and also supplies the rural districts with all kinds of manufactured articles. Meat packing and flour milling are leading industries in the state capital.



Tobacco warehouse, Louisville

Evansville is the principal shipping point for the coal, grain, flour and meat products of southwest Indiana.

Fort Wayne is an important trade center in the northeast part of the state. Many railroad cars are made in this city.

Terre Haute, at the head of the navigable part of the Wabash river, is growing rapidly as a trade center.

South Bend is famous for its wagons and plows.

New Albany is an important port on the Ohio river.

ILLINOIS. In the value of its manufactures **Chicago** ranks second only to New York. The various articles made or prepared for market in a single year in this great city are worth nearly as much as all the goods imported into our country during the same length of time. This city is the seat of the University of Chicago.

From what regions does Chicago receive wheat, corn, cattle, hogs, iron ore, coal, lumber? What canal route leads through Chicago?

Chicago has had a remarkable growth in industries as well as in population. Its nearness to the prairies and its fine position so far inland near the head of lake Michigan have made it the leading market of the world for grain and beef. As the railroads leading from the "Northwest" to eastern cities were obliged to go round the head of lake Michigan, and as the railroads from the prairies west and southwest of the city naturally ran to Chicago as the most convenient port for transferring freight to steamers on the Great Lakes, this city has grown to be the leading lake port and railroad center of the world. The iron-ore district of the upper lake region and the coal fields of Illinois find in Chicago a most economical point for bringing the fuel and the ore together, and this city ranks among the leading iron and steel centers of the country. The forests round the Great Lakes have enabled this great distributing city to become the chief lumber and furniture market on the continent. Agricultural implements also are made here. These are but a few of the great industries in which Chicago takes high rank.

French missionaries and fur traders were the first white men to explore and settle most of the Central states. They came from Canada across the Great Lakes and spread far down the Mississippi valley. Among the missionaries was Marquette. On his return from a voyage in a canoe down the Mississippi he went up the Illinois river, then crossed to the little Chicago river and reached the place where the great city of Chicago now stands.

Peoria is an important manufacturing and railroad center. This city is also an important market for corn, syrup and agricultural implements. East **St. Louis**, opposite St. Louis, is a great railroad center. This city has immense packing houses for beef, pork and mutton.

Springfield, the state capital, is a trade center for middle Illinois; and **Quincy**, for the western part of the state.

Rockford has abundant water power and is a manufacturing city. **Joliet** has large steel and iron works and quarries of excellent limestone.

MICHIGAN. **Detroit** has a fine harbor on the Detroit river, and owes its growth largely to its commanding position with regard to lake traffic. This city, like Chicago and Cleveland, is within easy reach of the lumber and iron regions, and is noted for the manufacture of automobiles, cars and iron goods.

Grand Rapids has excellent water power in falls of the Grand river, and is also near the lumber districts. No other city in the lake region, except Chicago, manufactures so much furniture. **Lansing**, the state capital, has large implement factories.

Saginaw, **Bay City** and **Muskegon** formerly carried on an immense trade in lumber, but the Michigan forests are rapidly being cut away, and this industry is not so active as in former years. The most productive salt works in our country are in Michigan.

Ann Arbor is the seat of the University of Michigan.

WISCONSIN. **Milwaukee,** the second city in size on lake Michigan, has a fine harbor and carries on an extensive lake commerce. Among its manufactures are iron goods, beer and leather. Much meat is packed here.

La Crosse, Oshkosh and **Eau Claire** are lumber markets. **Racine** manufactures wagons and farming implements. **Madison** is the capital and seat of the State University.

Superior and **Duluth** (Minnesota) share the same harbor and together ship more iron ore and receive and distribute more coal than any other port in our country. One of the great grain markets of the world is here. Superior has a large plant for shipbuilding.

KENTUCKY. This state takes the lead in the cultivation of tobacco and hemp. **Louisville** is one of the largest tobacco markets in the world. Great quantities of leather are tanned here. **Frankfort** is the capital.

Covington and **Newport** are on the Ohio river, opposite Cincinnati. These Kentucky cities, though among the largest in the state, are really suburbs of Cincinnati. They contain many fine residences.

Paducah is a thriving river port.

Lexington is in the *Blue Grass region*, — a district famous for fine horses. The famous Mammoth cave is in central Kentucky.

CENTRAL STATES,—WESTERN SECTION

70. Minnesota, Iowa, Missouri, Kansas, Nebraska, South Dakota, North Dakota

Far the greater portion of this group of states consists of fertile prairies like those in the states east of the Mississippi. *Review text on prairies in lesson 68.* The climate of the two parts of the prairie region is about the same, except that far westward the rain becomes less, along the border of the Western plains.

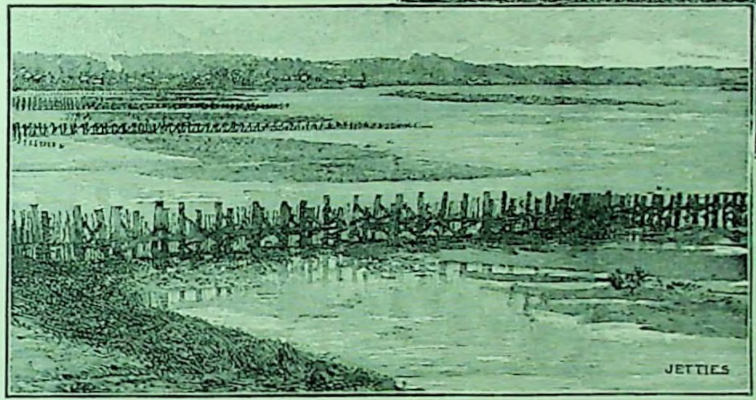
The prairie states west of the great river produce immense crops of corn, wheat and other grains; the grass lands support millions of cattle, horses and sheep; countless hogs are raised in the corn belt; rivers and railroads bear away the surplus product just as in the eastern section of the Central states.

The description of the prairies given in lesson 68 applies equally to the prairie region west of the Mississippi. There are the same kinds of soil, formed in the same way in various parts; the products are similar, not only on the farms but also in mines of coal under some parts of the prairies, and in the forests that border on the northeast of the prairies in Minnesota.

The richest wheat region in the world is in the valley of the Red river in Minnesota, North Dakota and the northeast corner of South Dakota. The soil is fine and deep and yields wheat of the finest quality, as well as in immense quantities. This region also extends far northward into Canada.

Ages ago a vast lake covered the valley of the Red river. Muddy streams flowed into the lake, and fine soil settled evenly over the bottom. At length the water drained away, and the smooth bottom became a level plain. This ancient lake covered the region now known as the Red river prairies, so famous for its wheat crops. The picture marked *Dakota farm scene,* on page 112, shows one part of these prairies.

Protecting banks of Missouri river



JETTIES

The forests of Minnesota supply both hard-wood and soft-wood trees. Nearly all the cities along the upper Mississippi have large sawmills and lumber yards. Much of the lumber is used for buildings in the treeless parts of the prairies; also for making furniture, wagons, flour barrels and parts of farming tools.

Missouri and Kansas have rich mines of lead and zinc. The Black hills of South Dakota have very rich gold mines. The iron mines in Minnesota are the richest in the world.

The Rocky mountain streams run quickly down their sandy valleys on the Western plains and carry along large quantities of sand, making banks and bars and thus clogging the streams.

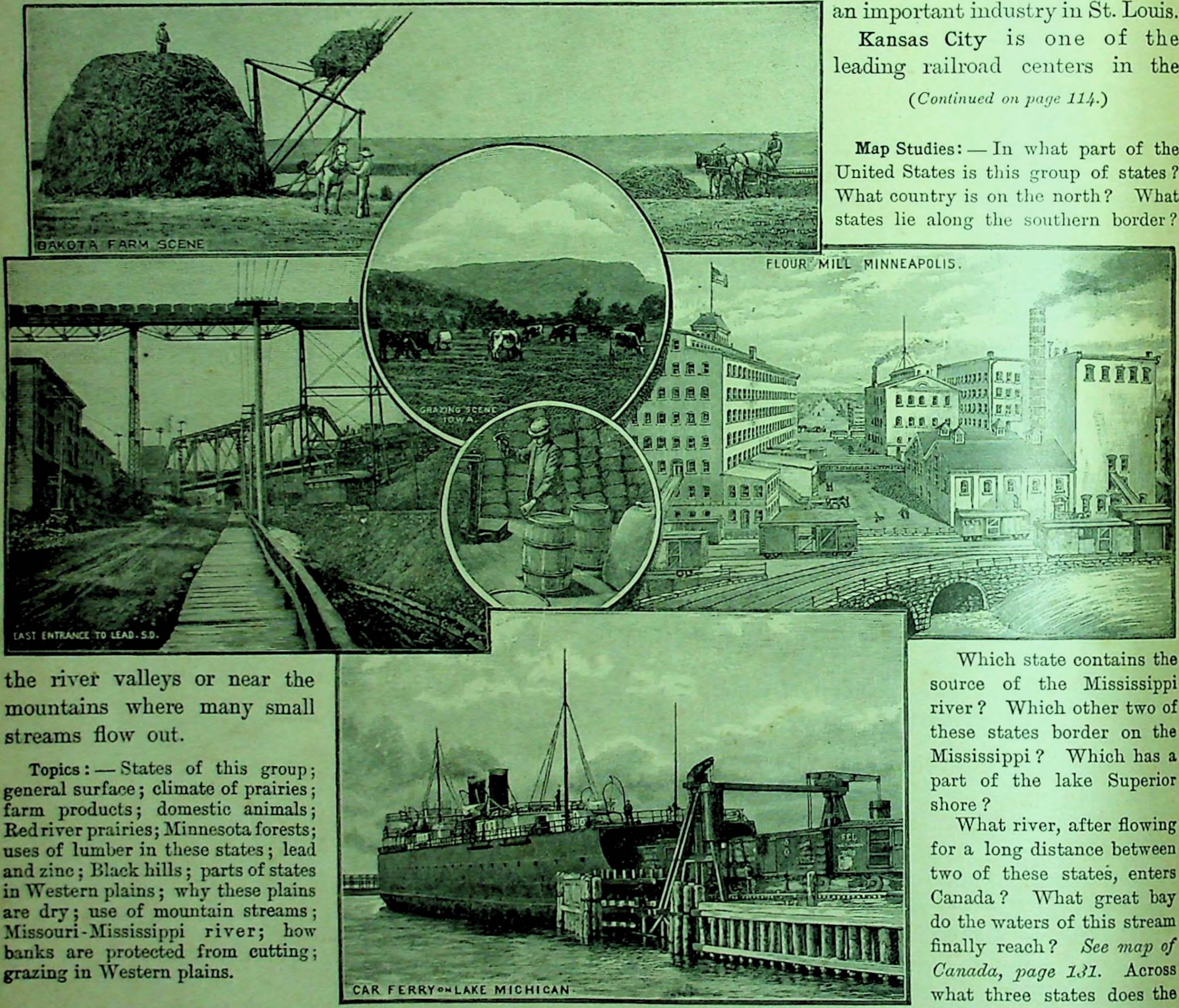
One of these streams is the Missouri river. It joins the Mississippi long before the latter reaches the gulf of Mexico. From its source to the gulf this is thought to be the longest river on the earth. Its name is often written *Missouri-Mississippi.*

Large rivers like the Missouri and the Mississippi often do much damage when flooded. They sometimes cut their banks, destroying fields and washing away railroads.

Jetties are built in some places to protect the river banks. One of the pictures on this page shows a simple form of jetty, consisting of branches woven among stakes driven into the river bed. The jetties not only prevent swift currents from striking the banks, but they also cause the muddy water to eddy into the still water between them and there deposit mud or sand. Some river banks are protected by interwoven branches, making mattress work like that shown in one of the pictures.

The western part of Kansas, Nebraska and the two Dakotas is in the Western plains and is thinly settled. The rainfall is light and all crops are most certain where the river water is led aside to irrigate the land. Moist winds from over the gulf of Mexico seldom reach the Western plains. The westerly winds lose most of their moisture on the high mountains west of these plains; but the rain and snow falling on the Rocky mountains feed great rivers that flow eastward across the dry plains, and some of these streams are very useful in irrigating the land.

Grasses grow in many parts of the Western plains, and millions of cattle are raised there. The best lands are in the river valleys or near the mountains where many small streams flow out.



DAKOTA FARM SCENE

GRAZING SCENE IOWA.

FLOUR MILL MINNEAPOLIS.

EAST ENTRANCE TO LEAD. S.D.

CAR FERRY ON LAKE MICHIGAN.

Topics: — States of this group; general surface; climate of prairies; farm products; domestic animals; Red river prairies; Minnesota forests; uses of lumber in these states; lead and zinc; Black hills; parts of states in Western plains; why these plains are dry; use of mountain streams; Missouri-Mississippi river; how banks are protected from cutting; grazing in Western plains.

71. Cities of the Central States, — Western Section[1]

Note: — Before studying the cities in each state of this group, review what lesson 70 tells about its surface, climate and products; examine also maps of lessons 43 to 58 and learn what you can of its industries.

Missouri. **St. Louis** has a population a little greater than that of Boston. The former is the principal trade center of the middle Mississippi valley and is reached by railroads and rivers from nearly all parts. Many of the products of this fertile valley find a market in St. Louis, and this city sends out groceries, clothing, boots and shoes and agricultural implements.

St. Louis takes high rank in the production of flour and in many other manufactures. It is near the Kentucky tobacco district and is among the leading cities in the manufacture of tobacco goods. Boot and shoe making is an important industry in St. Louis.

Kansas City is one of the leading railroad centers in the

(*Continued on page 114.*)

Map Studies: — In what part of the United States is this group of states? What country is on the north? What states lie along the southern border? Which state contains the source of the Mississippi river? Which other two of these states border on the Mississippi? Which has a part of the lake Superior shore?

What river, after flowing for a long distance between two of these states, enters Canada? What great bay do the waters of this stream finally reach? *See map of Canada, page 131.* Across what three states does the Missouri river flow? Of which state does it form the entire eastern boundary? What four states of this group are partly in the prairies and partly in the Western plains? *See lesson 42.*

What parallel forms the northern boundary of part of this group? Where is the broad ridge known as the Height of Land? In which state are the Ozark mountains? Where are the Black hills?

Name three state capitals on the Missouri river. On what river is the capital of Kansas? Of Iowa? Of Minnesota? What large city is a little above St. Paul, on the Mississippi?

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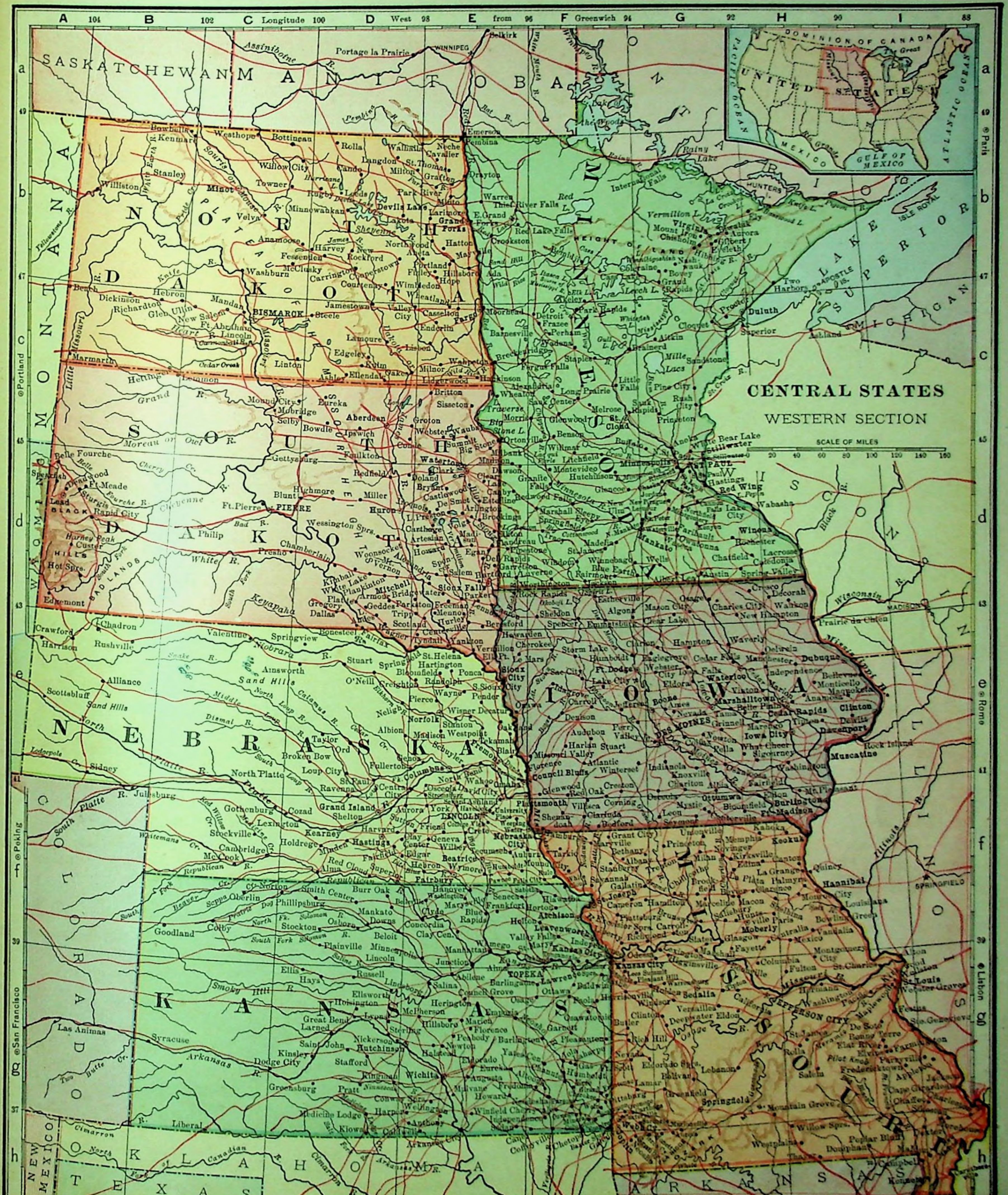
[1] *See footnote 2, on page 90, and footnote 1, on page 89.*


CENTRAL STATES
WESTERN SECTION
SCALE OF MILES
0 20 40 60 80 100 120 140 160
Longitude West from Greenwich
104
102
100
98
96
94
92
90
88
49
47
45
43
41
39
37
Portland
Paris
Peking
Rome
San Francisco
Lisbon
DOMINION OF CANADA
UNITED STATES
PACIFIC OCEAN
ATLANTIC OCEAN
MEXICO
GULF OF MEXICO
SASKATCHEWAN
MANITOBA
ONTARIO
WINNIPEG
Lake of the Woods
LAKE SUPERIOR
ISLE ROYAL
APOSTLE IS.
MICHIGAN
MONTANA
WYOMING
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
COLORADO
NEW MEXICO
OKLAHOMA
TEXAS
ARKANSAS
MINNESOTA
IOWA
MISSOURI
WISCONSIN
ILLINOIS
BISMARCK
PIERRE
LINCOLN
TOPEKA
DES MOINES
JEFFERSON CITY
ST. PAUL
Minneapolis
Duluth
Fargo
Grand Forks
Sioux Falls
Omaha
Kansas City
St. Louis
St. Joseph
Wichita
Springfield
Dubuque
Davenport
Burlington
Keokuk
Hannibal
Missouri R.
Mississippi R.
Platte R.
Arkansas R.
Smoky Hill R.
Republican R.
Niobrara R.
Cheyenne R.
White R.
James R.
Red R.
Sand Hills
BLACK HILLS
BAD LANDS
PLATEAU OF THE MISSOURI
HEIGHT OF LAND

country and has an extensive trade in agricultural supplies. It is the headquarters of an immense meat-packing industry. **Jefferson City** is the state capital.

St. Joseph is a great live-stock market. It has large packing houses, clothing factories and flour mills.

Joplin is the center of the lead and zinc region of Missouri. **Springfield** is an important trade center.

IOWA. Iowa is a typical prairie state and is famous for its immense crops of corn and other grains, as well as for its dairy products. It has extensive coal fields. The state lies between the Missouri and Mississippi rivers.

Des Moines, the capital, is in the heart of the rich prairie region. The city has a large wholesale trade, and is noted for the manufacture of brick and tile.

Dubuque, Davenport, Clinton and **Burlington** are important river ports on the Mississippi. These cities have a large trade in the agricultural products of the state.

Sioux City is a large grain and meat market. It is on the Missouri river and is an important center of trade for the western part of the state.

Mississippi river near St. Paul

Council Bluffs, opposite Omaha on the Missouri river, is an important railroad city and a trade center for southwest Iowa.

Cedar Rapids is the commercial center of a fertile prairie region of eastern Iowa.

MINNESOTA. **Minneapolis** has fine water power in the falls of St. Anthony and is not far from the famous wheat region of the Red river valley. It leads all the cities of the world in the manufacture of flour. More than one fourth of Minnesota is covered with forests of white pine; the Mississippi river above Minneapolis is fed by many streams from the forest area, and this city has therefore become the leading lumber market in the Northwest.

St. Paul is a great railroad center at the head of steamboat navigation on the Mississippi. The principal industry of this city consists in gathering the products of the surrounding region and in shipping supplies to the farming and the lumbering districts. St. Paul and Minneapolis together form one of the leading industrial centers of the Union. The former is the state capital.

Duluth is an eastern terminus of the Northern Pacific railroad and is at the southwestern end of lake Superior. This city and **Superior,** across the bay in Wisconsin, form the principal outlet for the rich iron mines of Minnesota and the great wheat district in the Red river prairies. **Winona** is an important city on the Mississippi river.

NORTH DAKOTA. This state lies north of the corn belt, but its wheat district in the Red river valley has no superior. A large part of this state affords excellent grazing land for cattle and sheep. **Fargo** is the most important trade center. **Bismarck** is the capital.

SOUTH DAKOTA. The prairies in the northeast part of this state form a portion of the famous wheat region which extends also into North Dakota. The southeast part of South Dakota is in the corn belt. The rich gold mines of the Black hills are in South Dakota. This state is noted for cattle.

Sioux Falls is the largest city. **Pierre** is the state capital. **Lead City** is the center of the gold district.

NEBRASKA. The best farming land of Nebraska, as of the two Dakotas, is in the eastern half of the state. Corn and wheat are the most valuable products. The other half of the state forms part of the Western plains where cattle raising is the chief occupation of the people.

Omaha is a large railroad center and is a shipping point for cattle and grain. It has great packing houses in which meats are prepared for market.

This city is situated on the Missouri river and is an important center of supplies for the surrounding country.

Lincoln, the capital, is reached by several railroads and has grown to be the most important trade center in the corn and wheat region of southeastern Nebraska. This city is a well-known educational center.

KANSAS. This state, like Nebraska and the Dakotas, is part prairie and part plains, but grains thrive in nearly all parts. The chief products are corn, wheat, cattle and hogs; and in these products the state takes high rank. The grains grow best in eastern and middle Kansas. The most fertile lands are the flood plains or bottom lands near the rivers.

The most productive bottom lands are those nearest the rivers, but the second bottoms, a little farther back, are very fertile.

Kansas City, adjoining the city of the same name in Missouri, is the greatest meat market west of the Mississippi river. Chicago is the only American city which surpasses Kansas City in the value of its meat-packing industries.

Southeast Kansas shares with Missouri one of the richest lead and zinc districts in the country.

Topeka, Wichita and **Leavenworth** are important market centers in the grain and cattle districts. Topeka is the capital.

WESTERN STATES

72. Montana, Wyoming, Colorado, New Mexico

The Western states may best be studied in three groups, as follows: the Rocky mountain states; the Plateau states; the Pacific coast states.

The high ranges of the Rocky mountains cross the states of Montana, Wyoming and Colorado, and send lower ranges far southward into the state of New Mexico. On the east side of the mountains these states extend into the dry Western plains.

Review the text of lesson 70, about the Western plains.

A wide belt along the eastern base of the Rocky mountains in Colorado and large areas in the other states are irrigated by water led from streams coming from the mountains. This irrigated land produces fine vegetables and fruits, as well as grass and grain. Some of the products of this belt are shown in the small picture of fruits and vegetables on page 51.

Irrigating wheat

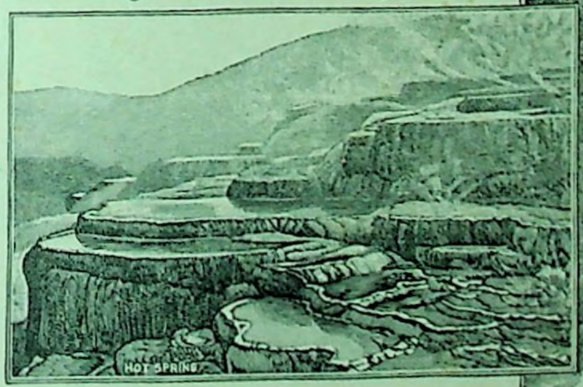
Many cattle and sheep are raised on the plains in these states. Most of them are shipped to eastern markets.

The Rocky mountains are the main divide of the continent. This lofty chain contains the sources of many large rivers of our country, some flowing to the gulf of Mexico and others to the Pacific ocean or its long arm, the gulf of California. Among these are the western branches of the Mississippi; also the Rio Grande, the Colorado and branches of the Columbia.

The Rocky mountains consist of many parallel ranges, running mostly north and south, but bending to the northwest between Montana and Idaho.

Between some of these ranges, especially in Colorado, are many high valleys or basins, known as *parks.* Some of these contain hundreds of square miles of land fairly level and covered with good soil washed from the surrounding mountains. Some parts are wooded, and other parts are fine pasture lands.

Among the best known of these are the North, Middle, South and Estes parks. The sources of the Platte, Arkansas, Colorado and Rio Grande are in this park region. These rivers, like many others of the mountain region, have cut deep canyons through the solid rock of the ranges.



Scene in Yellowstone park

The lofty Wasatch mountains in Utah are part of the Rocky mountain chain.

In the Rocky mountains, as in all high mountains, bare crags stand out near the summits, and coarse stony waste creeps down the slopes into the valleys. The finer part of the rock waste is washed farther and is spread over the lower land. The plains along the eastern base of the Rocky mountains are made of waste which in ages past has been washed from the slopes of the great ranges.

In southern Wyoming the mountains drop to a high plateau, making a break through the chain. The route of the first railroad built across our country leads over this plateau.

In the northwest part of Wyoming, and extending a few miles into the border states, is Yellowstone park, an area reserved for the use of the nation and therefore called a *national park.* It is famous for its geysers, hot springs, falls and canyons.

Some of the geysers throw streams of hot water more than two hundred feet into the air. Steam escapes with loud roaring and makes the ground tremble. The water in some of these fountains falls back into basins, to be belched forth again. In other geysers the water is broken into fine spray and is carried away by the wind.

In many basins the water does not spout but only rises and forms pools or hot springs. These often overflow and make terraces of stone, by depositing lime or other matter.

The rainfall is not very heavy on the Rocky mountains in the United States, because the great chain lies far away from the sea, and much of the moisture in the westerly winds falls on high ranges near the Pacific coast. Only small parts of the Rocky mountains are forested, but even this light supply is valuable for use in the almost treeless plains along the eastern base.

The Rocky mountains are very rich in gold, silver, copper, lead and other metals. The copper mines at Butte, Montana, are among the most productive in the world; they are second in value only to the copper mines of Arizona.

Around Cripple Creek, Colorado, is one of the richest gold fields known. Both Colorado and Montana rank very high in the production of silver. Gold and silver are found in the entire belt of states crossed by the Rocky mountains. Immense quantities of lead come from some of the ores that yield silver. Coal is found in some of these states.

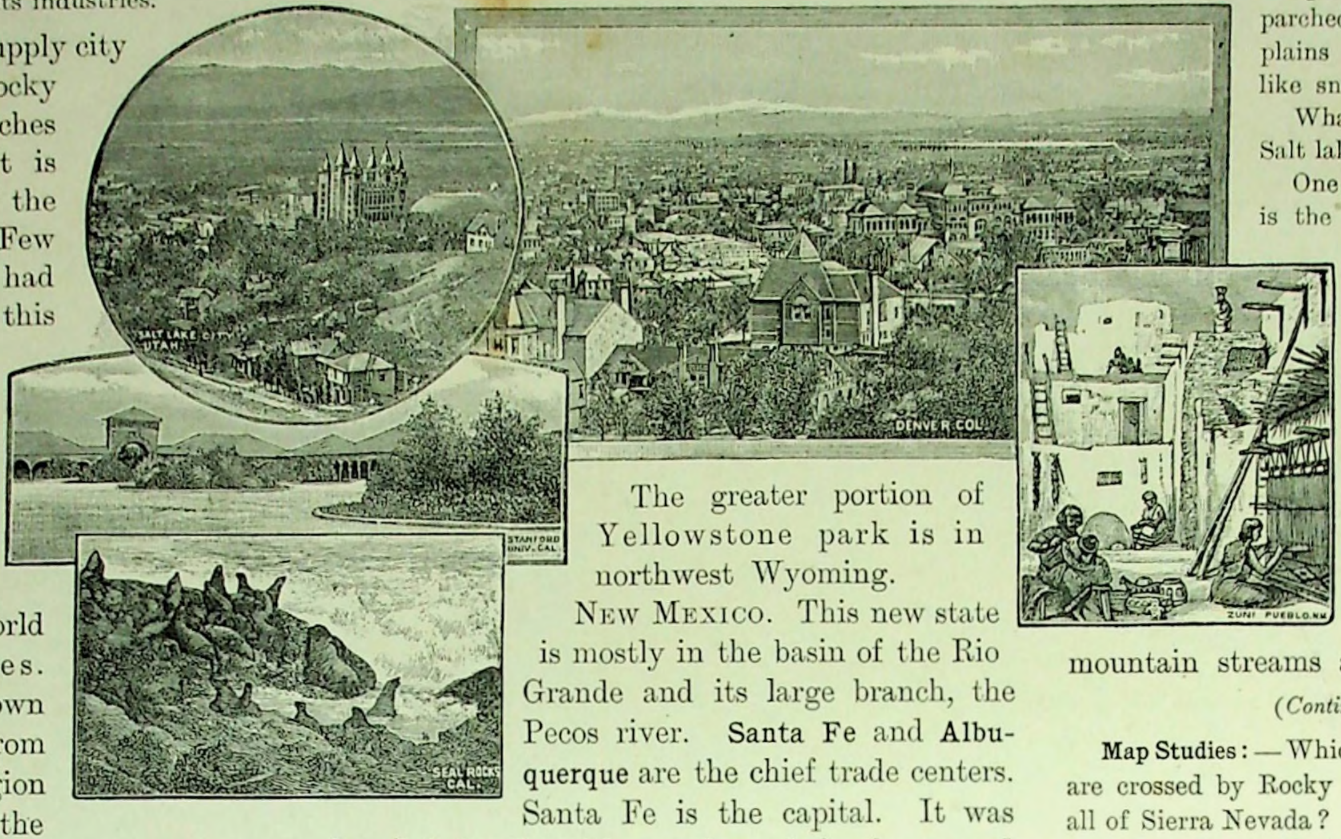
Yellowstone falls

Topics: — Three groups in Western states; states of Rocky mountain group; Western plains; climate and products along base of Rocky mountains; continental divide; rivers flowing from Rocky mountains; parks and rivers; Wasatch range; Yellowstone park; rainfall in these states; mining products; Butte; Cripple Creek; leading state for gold; leading states for silver; one source of lead.

73. Cities of the Rocky Mountain States[1]

Note: — Before studying the cities in each state of this group, review what lesson 72 tells about its surface, climate and products; examine also maps of lessons 43 to 58 and learn what you can of its industries.

Colorado. **Denver** is a supply city for mining districts in the Rocky mountains and for cattle ranches on the Western plains. It is located near the foothills of the giant range of the Rockies. Few cities in our country have had a more rapid growth than this state capital.


SALT LAKE CITY UTAH
DENVER, COL.
STANFORD UNIV. CAL.
SEAL ROCKS CAL.
ZUNI PUEBLO, N.M.

Pueblo and **Leadville** have large smelting works. The latter city is in the heart of the Rocky mountains, nearly two miles above sea level. It is one of the greatest silver-mining cities in the world and has rich gold mines. **Colorado Springs** is a well-known resort for invalids. Not far from this city is a mountain region known as the "Garden of the Gods." It is famous for its scenery. **Cripple Creek** is world-famed for its rich gold mines.

Montana. The chief occupations in this state are mining and stock raising. Montana is famous for its rich copper mines. It is a leading state in the production of silver. The gold mines of Montana are very productive.

Both **Butte** and **Helena** have a large trade in mining outfits. There are also extensive smelting works in these cities. Butte is noted for copper. Helena is the state capital.

Great Falls is a manufacturing center.

Wyoming. This state has few mines, but it has many sheep and cattle. **Cheyenne** and **Laramie** are the principal trade centers and are in irrigated districts. The former city is the capital and one of the largest cattle markets in America, because it is the only shipping point for a large grazing area.

The greater portion of Yellowstone park is in northwest Wyoming.

New Mexico. This new state is mostly in the basin of the Rio Grande and its large branch, the Pecos river. **Santa Fe** and **Albuquerque** are the chief trade centers. Santa Fe is the capital. It was founded by Spanish people and is the second oldest town of the United States.

The raising of cattle and sheep is the principal industry. Silver ore is mined.

74. Idaho, Utah, Nevada, Arizona

The four states of Idaho, Utah, Arizona and Nevada are in the plateau region, sometimes called the basin region. The Great Basin, between **the Sierra Nevada and Wasatch mountains, is** part of this plateau region.

The Great Basin is mainly in Utah and Nevada. Many low ranges run north and south over the basin. Little rain reaches this region, because the high Sierra lies between it and the coast from which most of the winds blow. Many of the ranges are treeless, and the plains between them are almost deserts.

In these plains are shallow hollows, or *sinks*. Winter rains flow into the sinks and form shallow lakes, but the summer drouths cause the lakes to shrink. Some of the places covered by water in winter are parched plains in summer. In these dry plains the wind drifts the sand about like snow.

What does lesson 41 tell about Great Salt lake?

One of the largest rivers of this basin is the Humboldt. This is one of the streams that run into sinks and form salt lakes. The first railroad built across the continent follows the Humboldt river past the ends of about fifteen ranges, thus saving a hard climb over the mountains.

Parts of the Great Basin, especially along the western base of the Wasatch mountains, are irrigated from mountain streams and are very fertile. Many

(*Continued on page 118.*)

Map Studies: — Which states of the southwestern group are crossed by Rocky mountains? In which is nearly all of Sierra Nevada? Which two states contain nearly whole of Great Basin? Where is Great Salt lake? Grand canyon of the Colorado? Into what gulf does Colorado river flow?

Into what large gulfs do streams rising in Colorado flow? What mountain valley or *park* is near the Wyoming border? Near Longs peak? Near Pikes peak?

Where is the Great American desert? Mohave desert? Colorado desert? Gila river?

What two rivers drain valley of California? Into what bay do they flow? What large city is on a peninsula at entrance to this bay?

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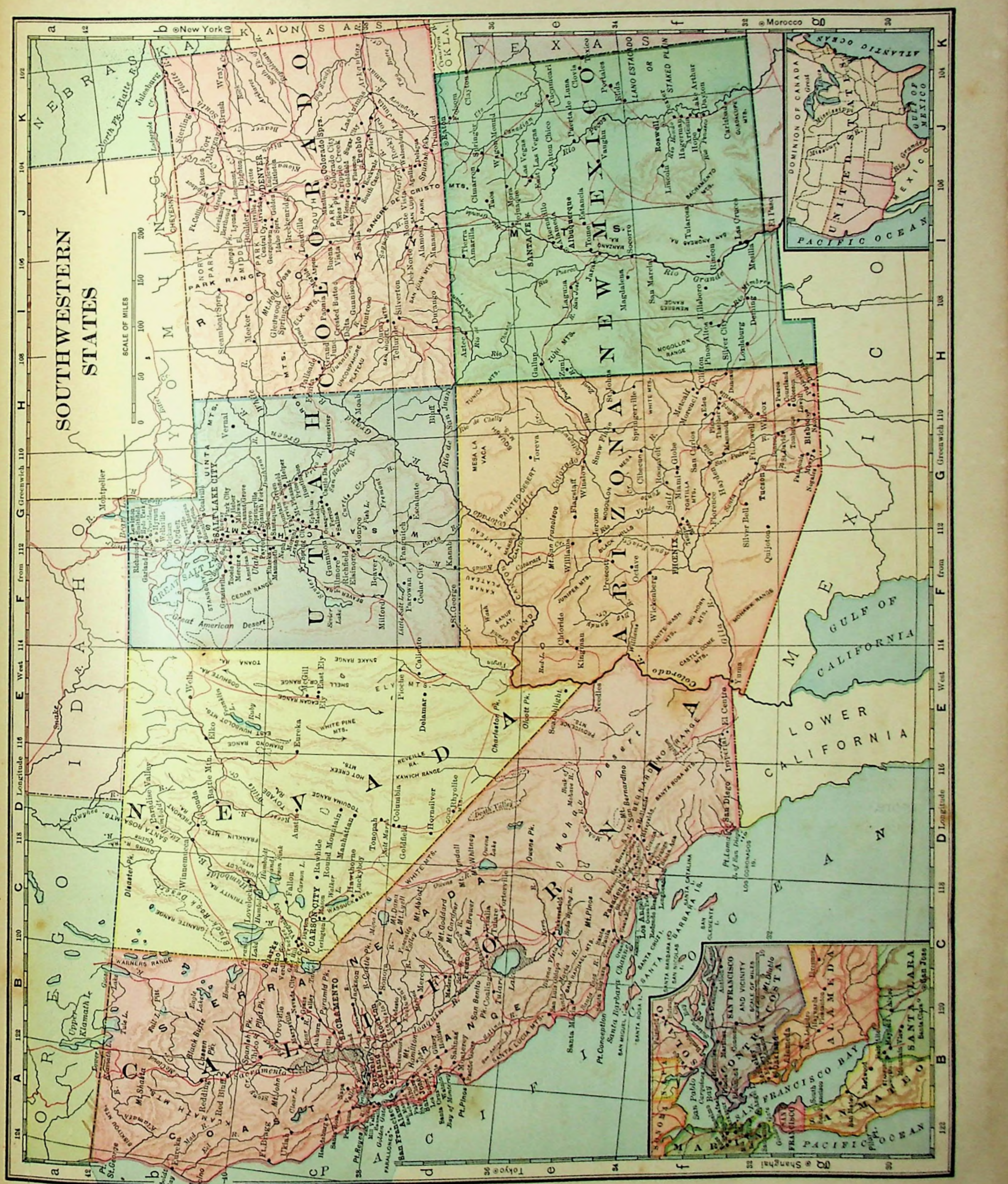
[1] See footnote 2, on page 90, and footnote 1, on page 89.


SOUTHWESTERN STATES
SCALE OF MILES
0 50 100 150 200
CALIFORNIA
NEVADA
UTAH
ARIZONA
COLORADO
NEW MEXICO
OREGON
IDAHO
WYOMING
NEBRASKA
KANSAS
OKLA.
TEXAS
MEXICO
LOWER CALIFORNIA
GULF OF CALIFORNIA
PACIFIC OCEAN
SACRAMENTO
CARSON CITY
SALT LAKE CITY
PHOENIX
SANTA FE
DENVER
San Francisco
Los Angeles
San Diego
Tucson
El Paso
Longitude West from Greenwich
New York
Morocco
Tokyo
Shanghai
DOMINION OF CANADA
UNITED STATES
ATLANTIC OCEAN
GULF OF MEXICO
SAN FRANCISCO AND VICINITY
SAN FRANCISCO BAY

cities and towns have grown up in this part of Utah, east and southeast of Great Salt lake. Wherever streams are used to irrigate the land, it is fertile.

In the western part of the Great Basin, in the Sierra Nevada, are some of the rich gold mines of the country. Several cities and towns have been built in the region of these mines. Gold and silver are found also in many other parts of the Great Basin, and have led to the growth of many towns.

The northern part of Arizona is a region of high plateaus and deep canyons. The largest and deepest of the canyons is that cut in solid rock by the Colorado river and its branches.

Flow of lava, Idaho

These plateaus were formed ages ago by the slow uplifting of great blocks of land many miles long and wide. The tops of some of the blocks are a mile or a mile and a half above sea level. The edges of the higher blocks form cliffs a thousand or more feet high. These high blocks are known as the *Colorado plateaus.*

Across these plateaus the Colorado river has cut its great canyon, with steep sides all rugged with cliffs and ravines. *See lesson 41.*

Locate on the map the Grand canyon; the Marble canyon.

This high plateau region is thinly settled, for most of the plateaus are dry and barren. But across the middle of the state of Arizona, as well as in the southern part, some of the ranges have forests of pine, and the towns along the railroads of the region handle lumber.

The southern half of Arizona is not so rugged and has more rainfall. Several cities and many towns have been built in the valley of the Gila river. Large tracts are made fertile by irrigation, and there are excellent fruit groves and grass lands. Here also are the richest copper mines in the world, as well as mines yielding gold and silver.

The state of Idaho and the eastern half of Washington and Oregon are in the northern part of the plateau region. This section is not so high as that farther south, and it has heavier rains. There are many fertile valleys; some are covered with valuable fir and other soft-wood forests; some have deep and rich soil, which yields large crops of wheat. Gold and silver are mined in the highlands of these states.

One of the largest lava plains in the world is in the valley of the Columbia river, east of the Cascade range. It covers parts of Washington, Oregon, Idaho and British Columbia.

Long ages ago there were large flows of lava in this region. The lava spread out over the land, till nearly 200,000 square miles of the old surface lay buried under the melted rock. This cooled in the form of a vast plain, equal to about one twentieth of the United States.

Ages have passed since the great flows took place. Rivers have worn canyons in the lava beds, — the largest being the canyon of the Snake river. Near the head of its canyon the river plunges over the edges of lava beds, making falls of great size and beauty. These are known as the *Shoshone falls.* Along the sides of the canyon, both above and below the falls, can be seen the lava and ashes, layer on layer, through which the river has cut its deep channel.

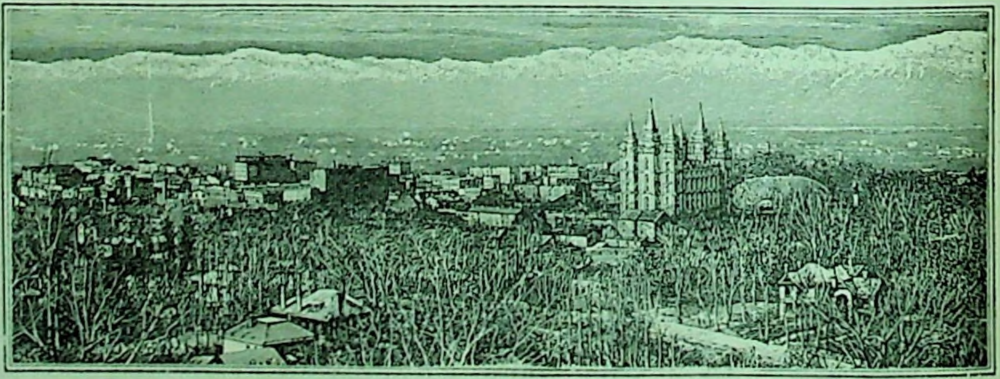
When lava is worn to fine dust it forms very rich soil. Many of the river valleys of this great lava plain produce immense crops of wheat. In the less fertile parts many sheep and cattle are raised.

Topics: — States of the plateau group; Great Basin; Great Salt lake; Humboldt river; irrigation in Great Basin; mining in Great Basin; plateau region of northern Arizona; forest regions of the same state; Colorado canyon; Gila river valley; mining products of southern Arizona; states in northern part of plateau region; rainfall and products there; lava plains; Snake river; products of fertile parts of lava plains.

75. Cities of the Plateau States[1]

Note: — Before studying the cities in each state of this group, review what lesson 74 tells about its surface, climate and products; examine also maps of lessons 43 to 58 and learn what you can of its industries.

Utah. Utah ranks high in the production of copper, gold, silver, lead and zinc. Considerable portions of this state, especially along the small river valleys, are irrigated. They yield grain, hay, fruits and vegetables. Here the cities of the state have been built.



Salt Lake City, Utah

Salt Lake City and **Ogden** are important railroad centers and points of supply. The former is the capital.

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[1] See footnote 2, on page 90, and footnote 1, on page 89.

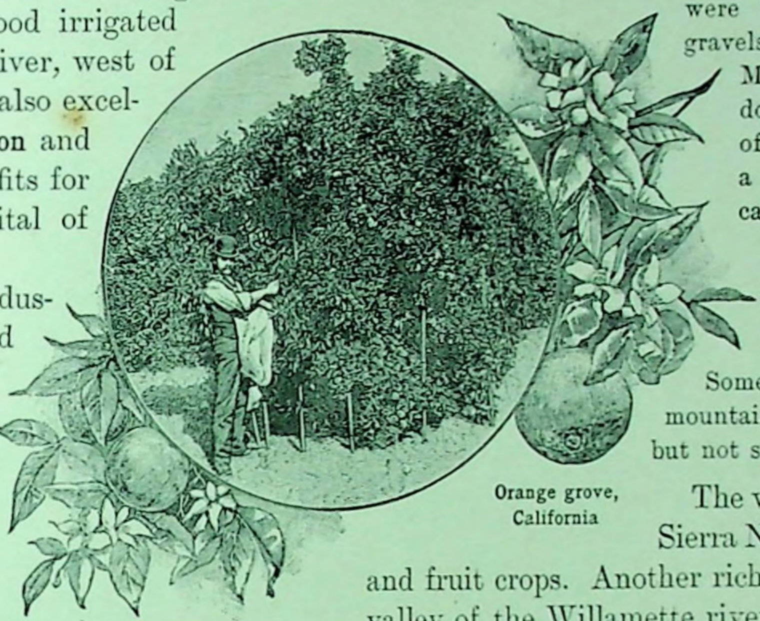
Nevada. Silver and gold mining rank first among this state's industries. The river valleys are suited to farming and grazing.

Virginia, **Reno** and **Carson City** are mining centers. The latter is the capital.

Arizona. Copper, gold and silver are the chief products of the mines in this state. Arizona ranks highest in the output of copper. There are good irrigated farms in the basin of the Gila river, west of the Colorado plateau region, and also excellent grass land for cattle. **Tucson** and **Phœnix** have a large trade in outfits for miners. The latter is the capital of the state.

Idaho. Mining is the chief industry of Idaho, with silver, gold, lead and zinc as the products. The river valleys of this state are very productive. There are fine wheat fields and orchards.

Boise and **Pocatello** are the trade centers of Idaho. The former is the capital of the state.


Orange grove, California

76. California, Oregon, Washington

The three coast states, California, Oregon and Washington, are crossed by the Sierra Nevada and Cascade mountains, which form the western border of the plateau region. West of these ranges are several long fertile valleys, partly inclosed by low Coast ranges on the west.

The high Sierra Nevada and the Cascades receive plentiful rains from the westerly winds. Their western slopes in California, Oregon and Washington are forested with fir and other trees yielding valuable lumber. *See lesson 48.*

The Yosemite valley is on the Pacific slope of the Sierra Nevada. *See map on page 117.* The depth of this wonderful valley is so great, and its sides are so steep, that hundreds of people visit it every year.

In some places its sides are about half a mile in height. Beautiful streams from the upland leap over cliffs into the valley.

Yosemite valley, California

The Sierra Nevada is one of the richest gold-bearing ranges in the Union. We have already seen that mining cities and towns have been built in western Nevada, where this range touches that state. There are also many mining cities along the west slope of the high range in California.

Gold was discovered in California in 1848, at just about the time when the treaty of peace was signed with Mexico, which made California a part of the United States. During the next year the "gold craze" spread over the country, and the rush for the gold fields began.

The first gold was found in gravels in a channel, or mill race, that was being dug to carry water for a sawmill. For a long time most of the gold was taken from river gravels; then cliffs were found formed of gold-bearing gravels buried under beds of lava. Many of these cliffs were torn down by sending strong streams of water against them, as shown in a picture on page 58. This is called *hydraulic mining*. Later, veins of quartz rock were found to contain much gold, and deep mines were dug to reach these veins in the mountains.

Some gold is found in the Cascade mountains of Oregon and Washington, but not so much as in the Sierra Nevada.

The valley of California, west of the Sierra Nevada, is famous for its wheat and fruit crops. Another rich wheat section is found in the valley of the Willamette river, flowing into the Columbia. We have already learned that some of the river valleys of the lava plain east of the Cascade mountains produce wheat. The Pacific coast states export much wheat and flour.

These states are noted for fruits. Oregon and Washington apples and cherries are found in the markets of nearly all large cities of the United States; the valley of California is the best grape and raisin section of the country; apricots and prunes thrive in many small valleys between low ridges of the Coast range in California and Oregon; oranges and lemons of the finest quality in the world are raised in many parts of southern California.

The western coast of the United States has few good harbors. The best is at San Francisco. Puget sound forms a large and safe harbor for several cities. The harbor of Portland is on the Willamette river, not far from where that stream joins the Columbia.

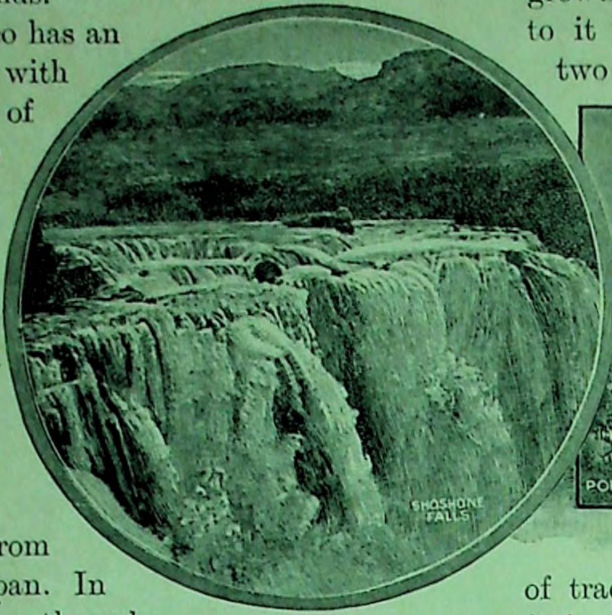
Salmon are caught in the rivers, bays and sounds along the coast from San Francisco to Alaska. Sea bass and other food fish are taken along the entire western coast.

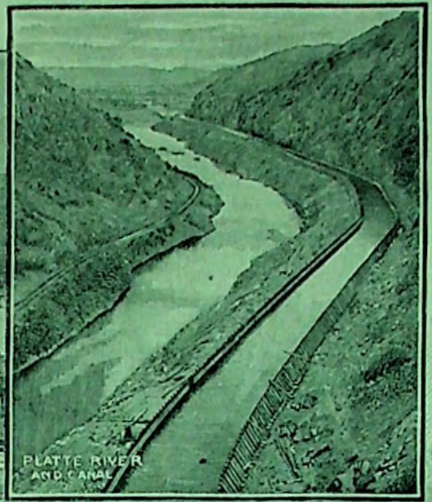
Topics: — Pacific coast states; mountain ranges; valleys; Coast ranges; winds and rainfall; forests of Pacific coast states; gold in Sierra Nevada; gold elsewhere in these states; wheat regions; exports; fruits and where found; harbors; fisheries.

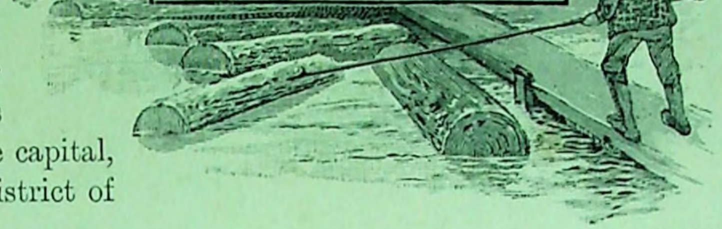
77. Cities of the Pacific Coast States[1]

Note: — Before studying the cities of each state of this group, review what lesson 76 tells about its surface, climate and products; examine maps of lessons 43 to 58 and learn what you can of its industries.

California. **San Francisco** is the natural outlet for the products of the valley of California. It is a leading port for the shipment of barley and refined petroleum. It leads also in the refining of sugar, which it receives from the Hawaiian islands.







San Francisco has an immense trade with the countries of western Asia, as well as a large inland trade. The principal manufactures of the city are clothing, boots and shoes.

Among the imports are silk and tea from China and Japan. In 1906 sharp earthquake shocks threw down many buildings in San Francisco and killed many people. Part of the city was burned, but it has been rebuilt.

Los Angeles is the largest trade center in southern California. This city is a noted tourist resort and an active fruit market. It is also the center of a rich petroleum district.

Oakland is on the east shore of San Francisco bay. Ferries cross the bay between these cities. Oakland is largely a city of residences. It is the home of many persons whose business is in San Francisco.

Sacramento, the capital, has a large trade in California wheat and fruit.

Oregon. The portion of this state east of the Cascade range has large cattle ranches. The Willamette valley is a rich farming and fruit district. Many sheep are also raised here. The Cascade and Coast ranges are heavily forested and they yield valuable lumber products.

The salmon fisheries in the Columbia river are important. The city of **Portland**, on the Willamette branch of the Columbia river, is the commercial center of the state. It owes its growth to both rivers and railroads, which bring to it the products of the fertile valleys of the two rivers. Among its leading articles of trade are wheat, lumber and fruits. The city has electric power sent on wires from falls and rapids not many miles away. **Salem**, the capital, is in the wheat, fruit and wool district of the Willamette valley.

Washington. The industries of this state resemble those of Oregon. Wheat and fruits are the leading products of middle and southeast Washington. Around Puget sound is one of the best lumber districts in the world. Coal also is found here. Washington has salmon fisheries in the Columbia river and Puget sound.

Seattle and **Tacoma** are important cities on Puget sound. They have excellent harbors and are the trade centers of the state. Both are large lumber markets. Wheat and flour are exported.

Spokane, the center of trade in eastern Washington, has fine water power. **Olympia** is the capital.

Map Studies: — Name two of these states crossed by Rocky mountains; by Cascade mountains. Which of these states has branch ranges of Rocky mountains along its eastern side? What range is west of Cascade mountains?

Which three of these states meet in Yellowstone park? Name a lake in this park. Name a large branch of the Mississippi river that has some of its sources in this park. What branch of Columbia has a source in this park? At about what part of distance from equator to pole is Yellowstone park? What great river from Canada flows into Washington, and in its lower course forms part of the boundary of that state?

DETACHED PARTS OF UNITED STATES

78. Alaska[1]

The entire territory of Alaska is a vast peninsula, partly bounded by two oceans and a large sea. In the southwest part is a small arm of land, known as the *peninsula of Alaska*, extending out to the chain of Aleutian islands, partly inclosing Bering sea.

Several scores of small islands form the Aleutian chain stretching along the south border of Bering sea. The islands are mostly of volcanic origin, and some of the craters are now active. The people resemble the Eskimos. The climate of the islands is severe and the soil is poor. The people therefore live by hunting and fishing.

Alaska is twice as large as Texas and almost one sixth as large as the United States proper. Along the Pacific coast rise the Alaskan mountains, the highest on the continent.

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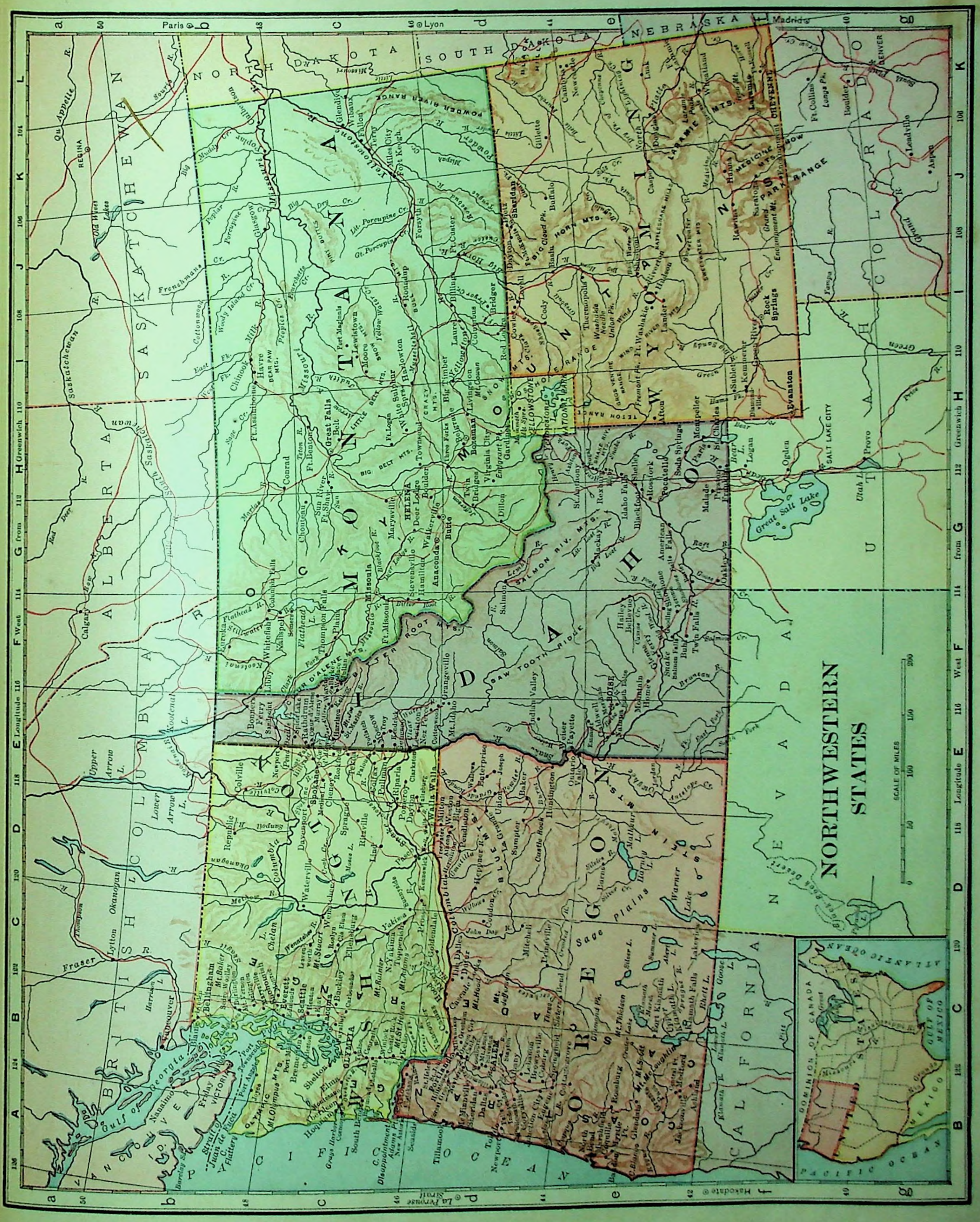
[1] See footnote 2, on page 90, and footnote 1, on page 89.

[1] See map studies on page 122.

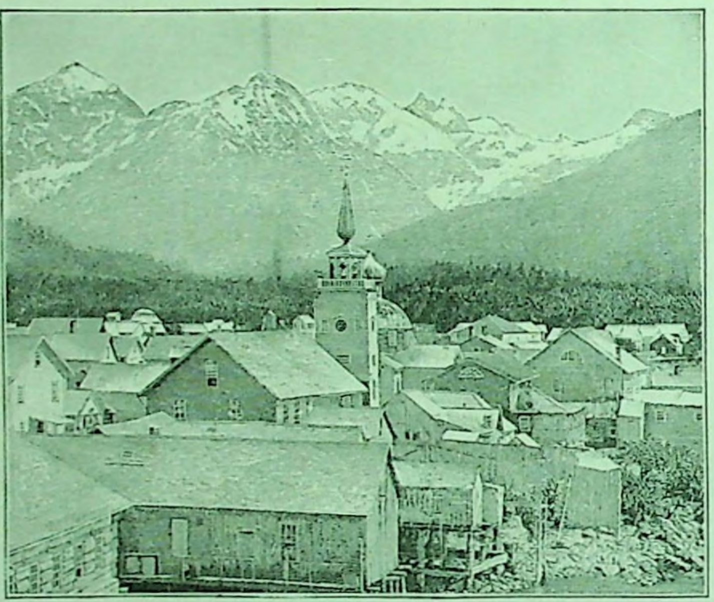

NORTHWESTERN STATES
SCALE OF MILES
0
50
100
150
200
WASHINGTON
OREGON
IDAHO
MONTANA
WYOMING
BRITISH COLUMBIA
ALBERTA
SASKATCHEWAN
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
COLORADO
UTAH
NEVADA
CALIFORNIA
PACIFIC OCEAN
YELLOWSTONE NATIONAL PARK
Great Salt Lake
SALT LAKE CITY
DENVER
CHEYENNE
HELENA
BOISE
OLYMPIA
SALEM
VICTORIA
REGINA
Longitude West from Greenwich
Paris
Lyon
Madrid
Hakodate
La Perouse Strait
DOMINION OF CANADA
UNITED STATES
GULF OF MEXICO
ATLANTIC OCEAN
MEXICO

The crowning peak, as far as is yet known, is Mt. McKinley, nearly four miles high. Just across the border in Canada are two other noted peaks, Mt. Logan and Mt. St. Elias, in the same great range.

The larger part of Alaska is a plateau region, but there are low tundras or frozen marshy plains along the Arctic coast and in the large river valleys. The Yukon is the principal river; its basin is perhaps about one third as large as the Mississippi basin.

The Yukon is building an immense delta. This stream is navigable by river steamers for about 1500 miles above the delta and is useful in carrying supplies to mining camps. The Yukon is frozen about eight months each year.

Alaska has one of the many coasts that are very irregular because the land has partly settled beneath the sea, letting the water flow far into valleys and thus forming bays, peninsulas and islands. One great chain of islands, the *Aleutians*, stretches along the southern side of Bering sea; another chain extends along the west coast of Canada, as far as Puget sound.



Sitka, Alaska

A long ocean current flows across the Pacific, in the torrid zone, sending one branch northward along the east coast of Asia. Passing the Japan islands, this current takes the name of *Japan current* and continues far northeast to the southern shore of Alaska, becoming somewhat cooler as it flows. Thence part bends southward along the western coast of North America.

The summer winds that blow from over the Japan current towards the southern shore of Alaska are mild and moist. They give heavy rainfall to the coast region and the southern slopes of the Alaskan range, and heavy snowfall to the upper parts of the mountains. In winter, when the air is much colder, snow falls both in the mountains and along the coast. The lower southern or seaward slope has large forests.

The upper slopes of the mountains are always covered with snow, and down the valleys on their sides flow great glaciers. Some of these rivers of ice enter the sea and break off in huge icebergs.

The portion of Alaska north of the mountain chain does not receive the mild moist winds and is therefore colder and drier than the southern coast region; but there is rainfall enough for open forests in parts of the interior. There the winter climate is very severe and the nights of that season are very long; but the air of summer is clear, cool and bracing, and there are many hours of daylight.

Some hardy vegetables and hay can be raised in the milder southern coastal region, but the air is too damp, and the summer season too short, for grains to ripen.

Gold is found in Alaska near the town of Juneau, in the cape Nome district north of the Yukon delta, and near the region where the Yukon river crosses from Canada to Alaska. Much copper is mined near the Copper river and in other parts of Alaska. Coal is mined also.

Only a small part of Alaska, along the southern coast, is really suitable for the homes of white people. There they have built **Sitka** on one of the islands, and **Juneau**, the capital, near the southeast coast. The gold fields have led thousands of men to seek their fortunes in the colder parts of Alaska and there to build small towns. **Nome** is a rich mining town north of the Yukon delta.

Among the large land animals are the caribou, the reindeer and the polar bear; but there are also many small fur-bearing animals. The shore waters abound in halibut and cod, and great quantities of salmon are taken in the rivers. Bering sea is the best sealing region in the world. Fishing and fur trading are important industries.

The best sealing grounds are on the Pribilof islands, far out in Bering sea. In summer countless seals go there to feed and to rear their young. Many are then killed for their fine fur. These islands belong to the United States. The Commander islands, another noted group of sealing islands in the same sea but nearer the coast of Asia, belong to Russia.

About one half of a century ago (1867) the United States bought Alaska from Russia, paying for it $7,200,000. This is a small sum compared with the value of the furs, fish, lumber and minerals which this region produces.

The original settlers in Alaska were Eskimos and Indians. The first white settlers were Russian fur traders. After the purchase by the United States small numbers of Americans went to Alaska to engage in the fur trade and fisheries. Later large numbers went to the gold fields; but along the coast there are still more Eskimos and Indians than white people.

Topics: — Form and boundaries of Alaska; Aleutian islands; area of Alaska; mountains; noted peaks; surface of interior; tundras; Yukon river and basin; Alaskan coast and its islands; Japan current; climate of Alaska; contrast of summer and winter; glaciers; forests; gold fields; best district for settlement; where towns have grown; chief towns; animals; sea products; Pribilof islands; people; how Alaska became part of United States; summary of industries of Alaska.

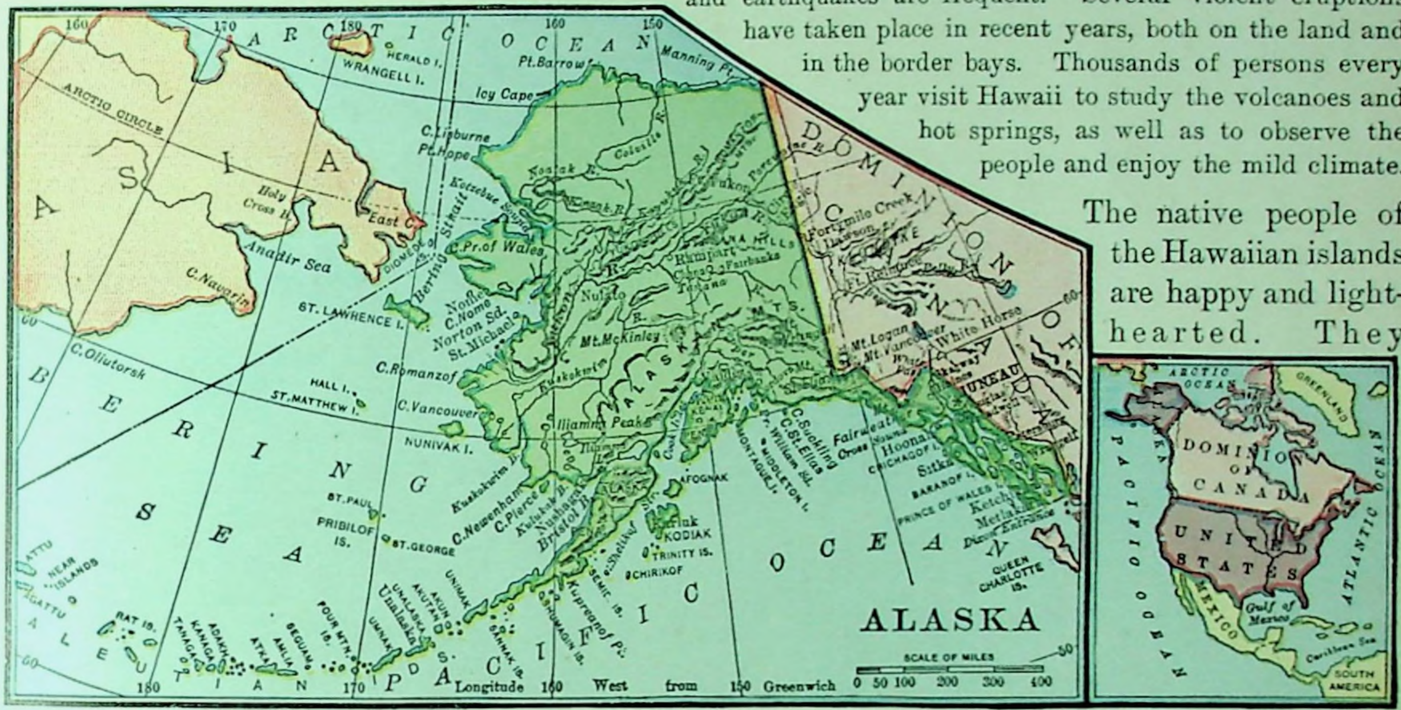
Map Studies: — What oceans and sea partly surround Alaska? What strait separates it from Asia? On which side of Arctic circle is narrowest part of this strait?

Describe course of Yukon river. On which side of Arctic circle is it building a great delta? Where is Cook inlet? Where are the Pribilof islands? Locate Sitka; Juneau; Nome; Mt. McKinley; Mt. Logan; Mt. St. Elias.

79. Hawaiian Islands[1]

Far out in the Pacific, about 2000 miles from San Francisco and in about the same latitude as Porto Rico, lie the islands of the Hawaiian group. They have a tropical climate, with plentiful rainfall. There are eight principal islands and a number of rocky islets. The total area is about one third greater than that of Connecticut.

These islands extend northwest and southeast for about 400 miles. They are of volcanic origin and are built up from the bottom of the ocean, which is here about 16,000 to 18,000 feet deep.



The largest island is Hawaii, and the same name is often given to the entire group. Most parts of the islands are rugged with cones, ridges and other forms of lava flows, but there are also many valleys of great fertility. The rich soil is well watered, and the vegetation is luxuriant. Tropical fruits abound. Sugar, rice, pineapples and coffee are the chief products and leading exports.

On the island of Hawaii rise two of the highest peaks in all the Pacific isles, — the volcanoes of Mauna Kea and Mauna Loa. Although their summits are only a little more than two and a half miles above sea level, yet the peaks really rise from the sea-bottom, a distance of over six miles.

Mauna Loa is active; on its east slope is the huge active crater of Kilauea, world-famed for its size and for the grandeur of its seething lake of molten lava. There are other active craters in the island, and earthquakes are frequent. Several violent eruptions have taken place in recent years, both on the land and in the border bays. Thousands of persons every year visit Hawaii to study the volcanoes and hot springs, as well as to observe the people and enjoy the mild climate.

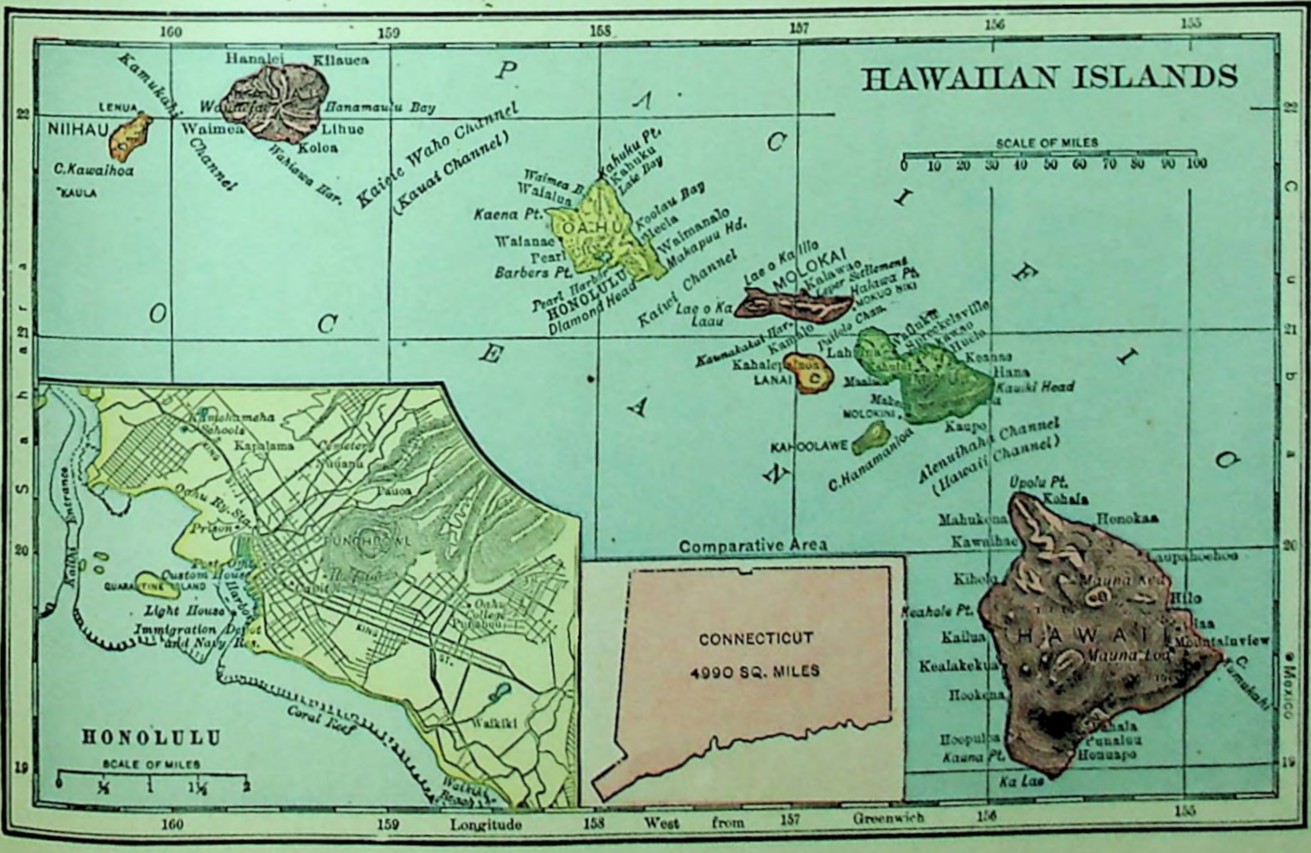
The native people of the Hawaiian islands are happy and light-hearted. They belong to the brown race and are more intelligent than any other natives of the Pacific islands, except some of the Filipinos. There are about 38,000 of these aborigines in the Hawaiian islands. The number of Japanese settlers in these islands is much greater, and the number of Chinese a few thousand less. There are also several thousand Americans, as well as white people of other nations.

Various chiefs, kings and queens ruled Hawaii until July 4, 1894, when the white people there formed a republic. About four years later the islands were annexed to the United States.

Hawaii is a territory of the United States. What is the name of the other territory? *See page 70.* Locate this territory on the commercial map on page 190.

The island of Molokai contains a leper settlement. Leprosy is the worst scourge among the natives, and the victims are sent to this island to prevent the spread of the disease.

Honolulu is the capital and chief city of the islands. It is finely located on a deep harbor on the south side



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[1] Formerly known as the Sandwich islands.

and coal promise a rich reward to future miners in the islands.

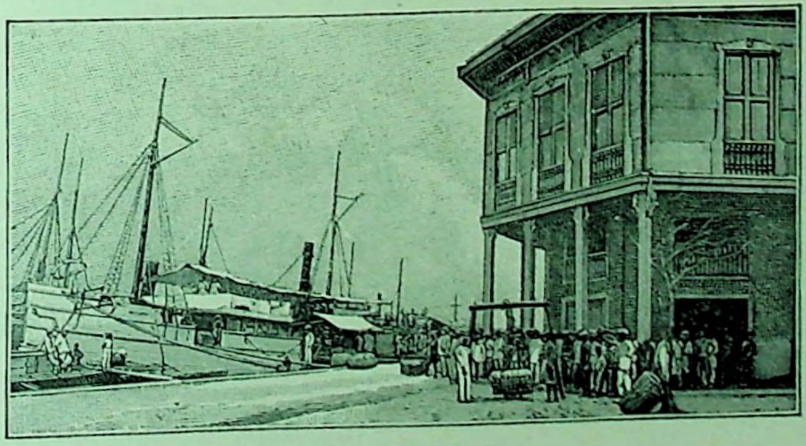
The primitive people of the Philippines are thought to be the *Negritos*, a dwarfish black race now found in the mountains of Luzon and Negros islands. They have the frizzly black hair, thick lips and wide nostrils, such as are seen among other people of the black race. The Negritos were long ago hunted from the lowlands by stronger people of the brown or Malay race, and now wander over the ranges and through the forests, without fixed homes, eating wild fruits and sleeping wherever they may be when darkness comes on.

Of the eight and one-half million natives of this archipelago, nearly all belong to the Malay race. In some parts of the islands they are called *Filipinos*. The Malays of the cities and towns are bright and intelligent, but the people of the forest and mountain tribes are "simple children of nature." The people on many of the islands are little known, but some of them are fierce and warlike.

Family of Negritos

Many of the tribes of the interior live on wild fruits, fish and game, with little thought of tilling the soil. The lance, bow and arrows are native weapons. During the dry season entire tribes wander through the forests, sleeping without other shelter than the trees; others make rude huts of bamboo, palm or rattan. On the various islands the natives differ in intelligence, beliefs, habits and modes of living.

Many Chinese have settled in the larger towns and cities. They are thrifty and carry on most of the local trade and banking. A few thousand Spanish and other people of the white race live in Manila, Iloilo and other towns. Nearly all the large towns are on the seacoast. Hundreds of American teachers and thousands of American soldiers are now serving in the Philippines.


Hemp press, Manila

Manila is the capital and largest city of the archipelago. It is about as large as San Francisco and is situated on a fine bay at the mouth of the Pasig river, the outlet of Bay lake. The greater part of the foreign trade of the islands passes through Manila.

The harbor of Manila was not deep enough to let the largest steamships lie along the wharves to load and unload. By building breakwaters and jetties and by dredging, it has been made one of the best and most modern harbors in that part of the world.

The older part of the city is on the south bank of the Pasig river; the newer part is on the north bank. The modern buildings are mostly low and built of wood, as they withstand earthquake shocks better than high stone structures.

During the late war with Spain American warships destroyed a Spanish fleet in the harbor of Manila.

Iloilo is the second port of importance. It is on the island of Panay.

The exports of the islands are mostly hemp, tobacco, copra and sugar. The principal imports are rice, flour, cloth, coal and kerosene. The foreign trade is chiefly with the United States and Great Britain.

Street scene in Manila

Topics: — How United States gained Philippines; locate this group of islands; two largest islands; Magellan; surface of islands; the climate; scenery; forests; leading plant products; Manila hemp; animals; minerals; Negritos; Malay race; Filipinos; native life in interior; Chinese; Spanish; Americans; Manila; Iloilo; exports; imports.

81. Other Island Possessions in the Pacific

GUAM. Almost due east of Manila, about 1600 miles out in the Pacific, lies the island of Guam, which Spain ceded to the United States at the close of the late war. It is the southernmost of a chain of islands stretching northward for about 500 miles. Magellan named these the *Ladrones*, or *thieves' islands*, because the natives stole some of his goods. *For Guam and other islands named below, see inset on map of Philippines, page 127; also map on page 187.*

The Ladrone islands are small and mostly volcanic in origin, and some have active craters. The climate is mild, like that of Hawaii. The islands have a population of 12,000, nearly all being brown people. Guam, the island belonging to our country, is the most important island of the group, and most of the natives live there. Fully half of the people are in the capital town of **Agana.**

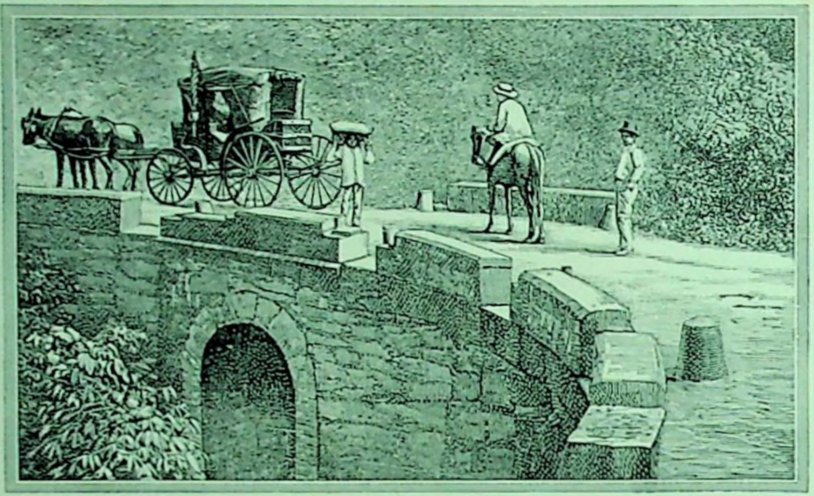
The island of Guam is the largest of the Ladrones. It is 30 miles in length and has an area of 210 square miles. It has a fringing coral reef.

When first visited by Magellan there were thought to be about 50,000 natives in this group of islands, but under the rule of white men the original natives became extinct. The present natives are descendants of Philippine tribes. They have several schools, and most of the inhabitants can read and write. Spanish is the common language. A few white people live in Agana.

Guam has no foreign trade, as it does not lie in the path of ocean steamers. The island has been made a coaling station and base of supplies for ships of the American navy.

TUTUILA AND MANUA ISLANDS. These islands are about as far south of the equator as Manila is north of that line, but they are far out in the Pacific, east of Australia. *See map of Australia, page 187.* They belong to a group known as the *Samoa islands*.

The Samoans are very skillful in using canoes, and for this reason their islands are often called the *Navigator's islands*. Germany formerly owned some of the Samoan islands. These are now administered by New Zealand; their chief town is **Apia**.


Military road between San Juan and Ponce

Tutuila and the Manua group belong to the United States. Their best harbor is **Pago Pago**, on Tutuila. It is a naval and coaling station. Tutuila is rugged with mountains, but there are dense forests and fertile valleys. The people belong to the brown race.

WAKE ISLAND. About as far northeast of Guam as this island is east of Manila, the little island known as *Wake island* has been built by coral polyps in the Pacific. It has many trees, but it is a lonely spot far out in the ocean and nobody lives on it. This is one of many tiny islands owned by the United States.

Topics: — Guam and Agana; Samoa islands; Tutuila; Apia and Pago Pago; Wake island.

82. Porto Rico and Virgin Islands

Porto Rico has, in general, the shape of a rectangle. It is about 100 miles in length by 36 in breadth, and is about three fourths as large as Connecticut.

The island has no large mountains, its loftiest peaks being only three fourths of a mile in height. For the most part the inland regions are hilly, with wooded ridges running east and west, sending small rivers to the seacoast on all sides. A broad belt of coastal region consists of level tracts, or *savannas*, alternating with uneven ridgy areas.

This island is in the torrid zone and has the wet and the dry seasons of that zone. Its lowlands have hot or warm weather almost all the year, with cool weather during the northern midwinter. Here, as in the rest of the torrid zone, the rainy season is during the hottest months. Day breezes from the sea and cool nights help to temper the hot climate and make it healthful. Porto Rico is one of the most healthful islands of the West Indies. Its hilly regions are cooler than the lowlands and afford relief from the intense summer heat.

The river valleys, coastal plains and hillsides of Porto Rico are very fertile. By far the most valuable product is sugar, which thrives on the low lands along the shore; next comes tobacco. Coffee grows best on the hill slopes. Sugar, coffee, tobacco and fruit are the leading products.

What does lesson 31 tell about sugar? About coffee? What does lesson 32 tell about tobacco?

About one million people live in Porto Rico. Of these, two thirds are white and one third are Negroes. Nearly all the white people are of Spanish descent.

Before the war between the United States and Spain this island belonged to Spain. At the close of the war Porto Rico was ceded to the United States.

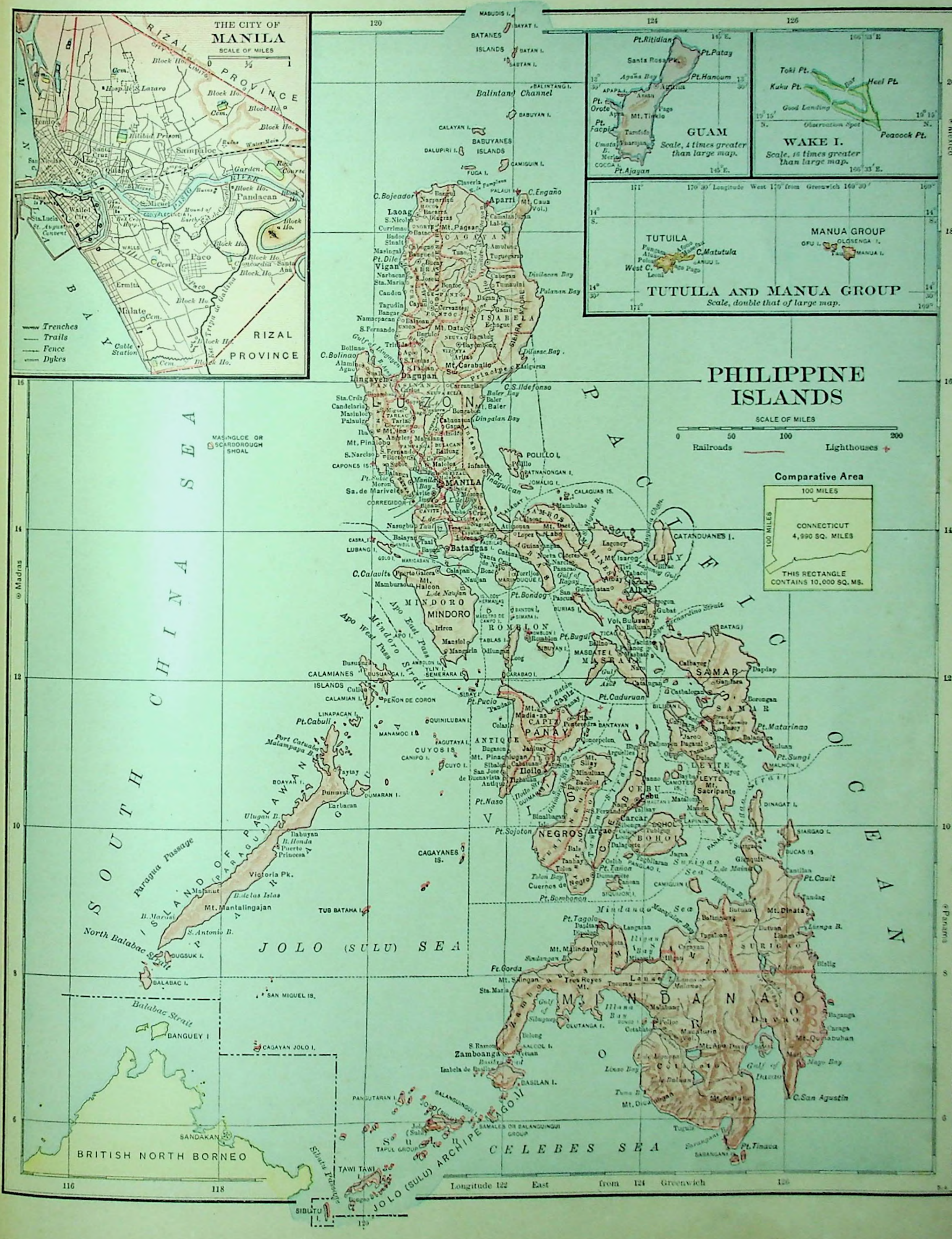
The cities and towns are mostly near the coast. **San Juan** is the chief city of the north coast and the capital of the island. It is built on a fine harbor.

Ponce, the largest city near the south coast, is connected with the capital by a military road running across the island. Other important cities share with the two named the export trade in sugar, molasses, coffee and cigars. The chief articles of import are cloth and metal wares. Most of the trade is with the United States.

VIRGIN ISLANDS. East of Porto Rico lies a group of small islands known as the *Virgin islands*. Of these, Vieques (or Crab island), Culebra (or Snake island) and a few smaller rocky islands were joined to the United States with Porto Rico. *See map on page 135.* We have since bought St. Thomas, St. Croix (or Santa Cruz) and St. John from Denmark. Still farther east are several small islands of this group, belonging to Great Britain.

The Virgin islands are mountainous, but there are fertile areas. Sugar is the principal product. St. Croix has an area of eighty-four square miles; St. Thomas is a little over one third as large; St. John is smaller. The chief port is **Charlotte Amalie**, on St. Thomas island. It has a deep harbor, where ships can outride with safety all storms except hurricanes from the south.

Topics: — Form and size of Porto Rico; surface; climate; products; people; how United States acquired this island; cities; exports; imports; principal Virgin islands; product; harbor.



83. Form of Government

The United States has grown to be the foremost republic and the wealthiest nation in the world.

The highest law of the nation is known as the *Constitution of the United States*. This written law, or body of laws, was adopted in Philadelphia[1] by men chosen from the thirteen states a few years after the Revolutionary war. It has since received several additions, or *amendments*.

The Constitution states what the form of our government shall be; names the various offices; indicates how the offices are to be filled; defines the authority of the officers; limits the power of the lawmakers; provides for national or *Federal* courts, of which the highest is the *Supreme Court;* and, in general, forms the highest law of the land.

The government has three main branches: one makes the laws; a second explains or interprets the laws; a third enforces the laws. The first is the *legislative* branch; the second, the *judicial;* the third, the *executive.*

The law-making or *legislative* department of the United States is known as *Congress*. It consists of two bodies, — the *Senate* and the *House of Representatives.*

Both the senators and the representatives are chosen by vote of the people. There are two senators from each state. The representatives are chosen according to the number of people in the state, but each state has at least one representative. Senators are elected to serve for six years; representatives are elected to serve for two years.

The chief executive officer is called the *President*. He is elected to serve for four years, and his duty is to enforce or execute the laws. He is Commander-in-chief of the army and navy of the United States.

To aid in governing, the President (with the approval of the Senate) appoints ten men known as members of the *Cabinet*. They superintend the foreign affairs, the finances, the army, the navy, the internal affairs, the commerce, the labor, the law cases, the postal matters and the agricultural interests of the nation.

With the President is elected a *Vice-President,* who presides over the Senate and who succeeds to the office of President if it becomes vacant during his term.

The President and Vice-President are chosen by *electors,* who are elected by the people. If the electors fail to elect, the national House of Representatives elects a President, and the Senate elects a Vice-President.

A proposed law presented to Congress for action is called a *bill.* It becomes a national *law* when it receives the consent of a majority of each body of lawmakers and the approval of the President. If the President disapproves or *vetoes* a bill, it cannot become a law without receiving a two thirds vote of each body, — Senate and House of Representatives.

The *Supreme Court* of the United States consists of a *Chief Justice* and eight *Associate Justices* appointed by the President, with the consent of the Senate, and holding office for life or during good behavior. There are also lower or inferior courts belonging to the general government. Together they are called the *Federal courts*.

The Federal courts may be called upon to decide such questions as these: cases arising between parties of different states; cases that depend on the meaning of treaties between this country and any other; cases that depend on the right of Congress to make certain laws; cases arising from trouble on American ships at sea; cases that affect consuls (*see lesson 39*) and some other public officers serving in foreign lands. Some of these cases are tried first by an inferior court, with right of appeal to the Supreme Court; but others are taken at once before the highest court.

All rights that the states did not give to the Union, under the Constitution, they reserved for themselves. From time to time new states have been added to the original thirteen, till now there are forty-eight, — over three and a half times as many as in 1776. Each state resembles a republic and has its Constitution, its Senate and House of Representatives, its Supreme Court, and its chief executive officer, called a *governor,* — as well as other officers.

Some parts of our country are not included in any state, but are known as *territories*. Their governors and judges are appointed by the President, with the consent of the Senate. The territories elect their own legislative bodies.

We have seen that there are now two territories, namely, Alaska, in the far northwest part of the continent, and Hawaii, a group of islands far out in the Pacific. The other divisions of the country, except the District of Columbia (*see below*) and such detached island possessions as Porto Rico and the Philippine islands, are states.

Congress has not yet decided as to the final form of government for Porto Rico and the Philippines.

From time to time, as the territories increase in population, some of them are admitted into the Union as states. Thus, in 1906, Congress voted to make the two territories of Oklahoma and Indian Territory a single state and named it the state of Oklahoma. The Indian Territory, now part of Oklahoma, was long ago set apart as a home for certain tribes of Indians.

Congress meets in the city of Washington, the Supreme Court sits there, the President resides in that city, and the members of the Cabinet have their offices there. Washington is therefore the *capital* of the United States.

The city of Washington is on a tract of land ceded by the state of Maryland for the use of the government. This tract of land is known as the *District of Columbia.* It is neither a state nor a territory, but is under the control of Congress.

Topics: — Form of government of United States; Constitution and its object; three branches of the government; Congress; number of senators; how number of representatives is determined; President; President's Cabinet; duty of Vice-President; how President and Vice-President are chosen; how a bill differs from a law; Supreme Court and its duties; duties of Federal courts; rights reserved by states; how a state resembles nation; how territory differs from state; number of states and territories; city of Washington; District of Columbia.

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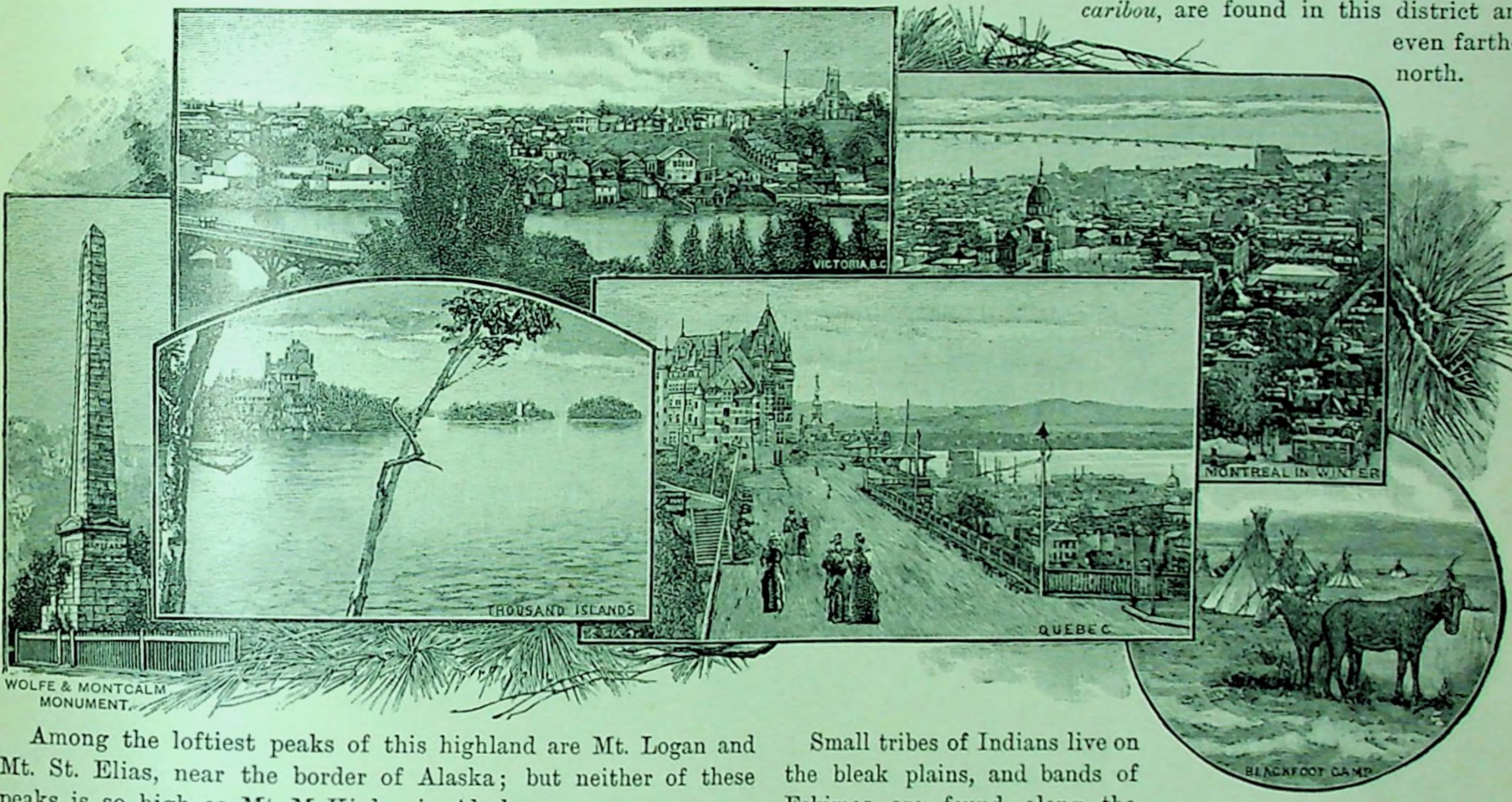
[1] The Constitution went into effect on March 4, 1789.

84. Canada, Newfoundland and Northern Islands

The surface of Canada is similar in many respects to that of the United States. In the west rise the lofty ranges of the Rocky mountain highland; in the east is the lower highland, chiefly in the Labrador peninsula; between them spreads the Central plain.

The Western highland of Canada consists of many ranges; the most important are the Coast range and the Rocky mountains. The former is a continuation of the Cascade mountains.

Both of these ranges are in the path of the westerly winds and receive plentiful rainfall. The summits are heavily snow clad and large glaciers are found on their slopes. The mountains, as well as the lower parts of the highland, are densely wooded.



Among the loftiest peaks of this highland are Mt. Logan and Mt. St. Elias, near the border of Alaska; but neither of these peaks is so high as Mt. McKinley in Alaska.

Branches of the Yukon river drain part of the northern region of the Rocky mountain highland. The famous Klondike gold district is in the Yukon basin, not far from the place where the river flows into Alaska. **Dawson** is one of several towns that have sprung up in this gold-bearing district. *See map on page 72.*

The St. Lawrence river flows in a valley that separates two parts of the eastern highland of North America. In the great peninsula of Labrador, between the gulf of St. Lawrence and Hudson bay, the highland consists of a low but rugged plateau, above which rise bare rocky hills; but no part forms a true mountain range.

In the valleys of this low plateau are many lakes and swamps through which streams flow. These lakes were formed in the same manner as those in New England. *See lesson 60.* Forests cover a large part of the region.

The winter winds which reach the peninsula of Labrador often blow from the north and are then cold and piercing. The winds that blow from the sea are also chilly, for a cold polar current sweeps past this part of the Atlantic coast.

Fur-bearing animals, as well as deer and wild fowl, are numerous, and the few thousand Indians and still fewer white people who make their homes in that cold region live by hunting. In summer they travel in canoes through lakes and streams, thus avoiding the swamps and forests.

The region west of Hudson bay and extending down the Mackenzie river basin to the Arctic coast is mostly a lowland, having many swamps, lakes and rivers. These lakes also were mostly formed in the same manner as those in New England.

For a long distance inland from the Arctic coast the plain is frozen all the year, except when the summer sun thaws a few inches of the topsoil. The southern part of the Mackenzie basin has forests and open grass lands. Large herds of reindeer, called *caribou*, are found in this district and even farther north.

Small tribes of Indians live on the bleak plains, and bands of Eskimos are found along the shores of the Arctic ocean and Hudson bay. To these people the caribou (*see page 52*) are of great value. The flesh is one of the staple foods, and the skins are used in making clothing and tents.

The most productive part of Canada consists of a broad belt of land about four hundred miles wide, lying along the northern border of the United States and reaching from ocean to ocean. This includes the region round the gulf of St. Lawrence, the valley of the St. Lawrence river, the section round the Great Lakes, the fertile prairies in the valleys of the streams flowing to lake Winnipeg, and the Pacific coast region.

Canada, or the *Dominion of Canada*, comprises the provinces of Nova Scotia, Prince Edward island, New Brunswick, Quebec, Ontario, Manitoba, Saskatchewan, Alberta and British Columbia; besides these there are Yukon Territory and the Provisional Districts of Mackenzie, Keewatin and Franklin.

The island of Newfoundland and a small part of the adjacent mainland do not form a part of Canada; but both Newfoundland and Canada belong to the British empire.

Canada and Newfoundland are parts of a limited monarchy. The governor-general of each is appointed by the king of Great Britain and Ireland.

The law-making or *legislative* department of Canada consists of a Senate and a House of Commons. The members of the former are appointed for life; the members of the latter are elected by the people, as in our own country.

Canada is about equal in area to the United States, but has only about one twelfth as many people. A large part of Canada once belonged to France, and many people of French descent still live there, though they are now greatly outnumbered by the English-speaking population.

In surface, climate and products the provinces of Canada along the northern border of the United States resemble the portions of our country which they adjoin.

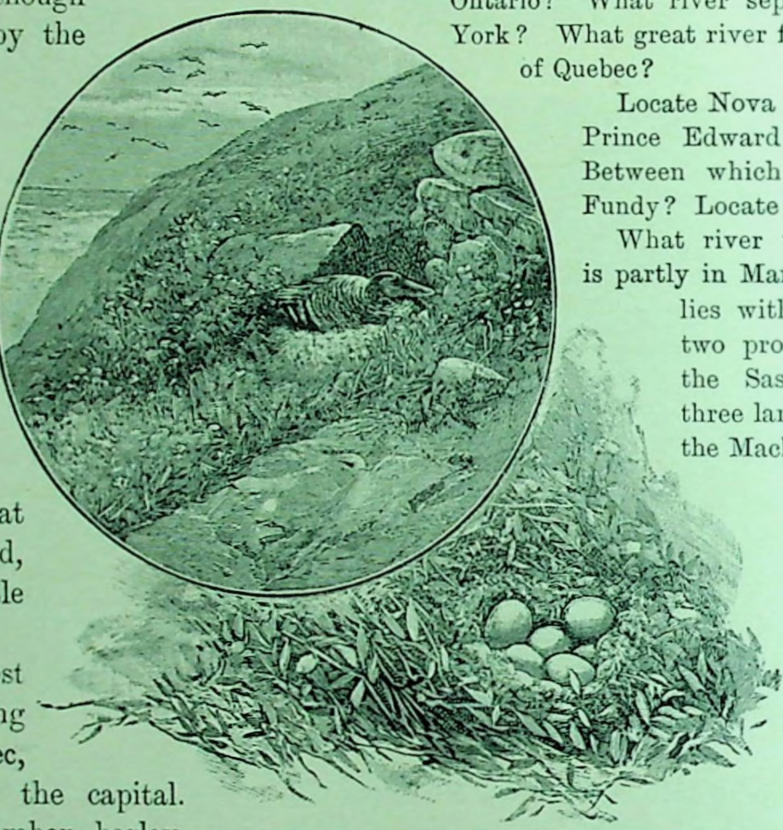
The most thickly settled portion of Canada is the region extending eastward from lake Huron, down the St. Lawrence valley to the gulf. It includes parts of the provinces of Ontario and Quebec. Barley and wheat thrive here, soft-wood forests abound, and large numbers of sheep and cattle find excellent pasturage.

In this productive area are found most of the large cities of Canada. Among these are **Montreal, Toronto, Quebec, Hamilton** and **Ottawa**; the latter is the capital. These cities have a large trade in lumber, barley, sheep and wool, cattle and hides.

The city of Montreal owes its growth largely to the fact that it is below the lowest rapids of the St. Lawrence river. Ocean steamers can ascend the river as far as this city.

The Red river prairies extend northward into Canada. These and other fertile prairie lands in the valleys of the streams flowing to lake Winnipeg yield immense quantities of wheat. The city of **Winnipeg** in the province of Manitoba is the most important center of trade for this famous wheat district.

(*Continued on page 132.*)



Eider duck and nest

Map Studies: — In what part of North America is Canada? What oceans partly bound it? Name a large bay that indents its north coast; name a large gulf on the east. Name a bay and a strait between Canada and Greenland.

What territory of the United States is northwest of Canada?

What does the relief map of North America (*see page 62*) show about the surface and coast line of Canada?

Which part of Canada is most mountainous? *See map on page 62.* What range lies along the shore of the Pacific? What great range farther inland also runs parallel to this coast? Locate Mt. Logan and Mt. St. Elias.

What large river drains most of the Arctic portion of the Central plain of North America? Into what ocean does this river flow? Name three lakes that send water through this river to the ocean.

What river flows from lake Winnipeg? What river from the south flows into this lake? What have you learned about the prairies in the valley of this river? *See lesson 70.* What does lesson 68 tell about the Great Lakes and the St. Lawrence river?

Review lessons 21, 22 and 23 and tell what you can of the climate of Canada. In what two zones is Canada? Describe the seasons of these zones.

Name some plant products of Canada. *See lesson 34.* What do lessons 37 and 59 tell about the animals of that country?

What large bodies of water partly surround the province of Ontario? What river separates Ontario from New York? What great river flows through the province of Quebec?

Locate Nova Scotia; New Brunswick; Prince Edward island; Newfoundland. Between which of these is the bay of Fundy? Locate British Columbia; Yukon.

What river valley famous for wheat is partly in Manitoba? What large lake lies within this province? Name two provinces drained chiefly by the Saskatchewan river. Name three large lakes that form part of the Mackenzie system.

What two provinces meet in the Rocky mountains?

Map Studies: — What bodies of water partly surround Mexico? What tropic crosses this country? What country is on the north? What general name is given to the group of small countries on the southeast?

What does the relief map on page 62 show about the surface of Mexico? Locate the Sierra Madre. In what part of Mexico are the volcanoes of Orizaba and Popocatepetl? What bodies of water are separated by the isthmus of Tehuantepec?

In what two zones is Mexico? Review lessons 21 and 22 and tell what you can about the climate of Mexico.

What does lesson 25 tell about the people of Mexico?

Map Studies: — Between what bodies of water do the countries of Central America lie?

Note: — Belize, on the west coast of the Caribbean sea, is a colony of Great Britain and not one of the countries of Central America.

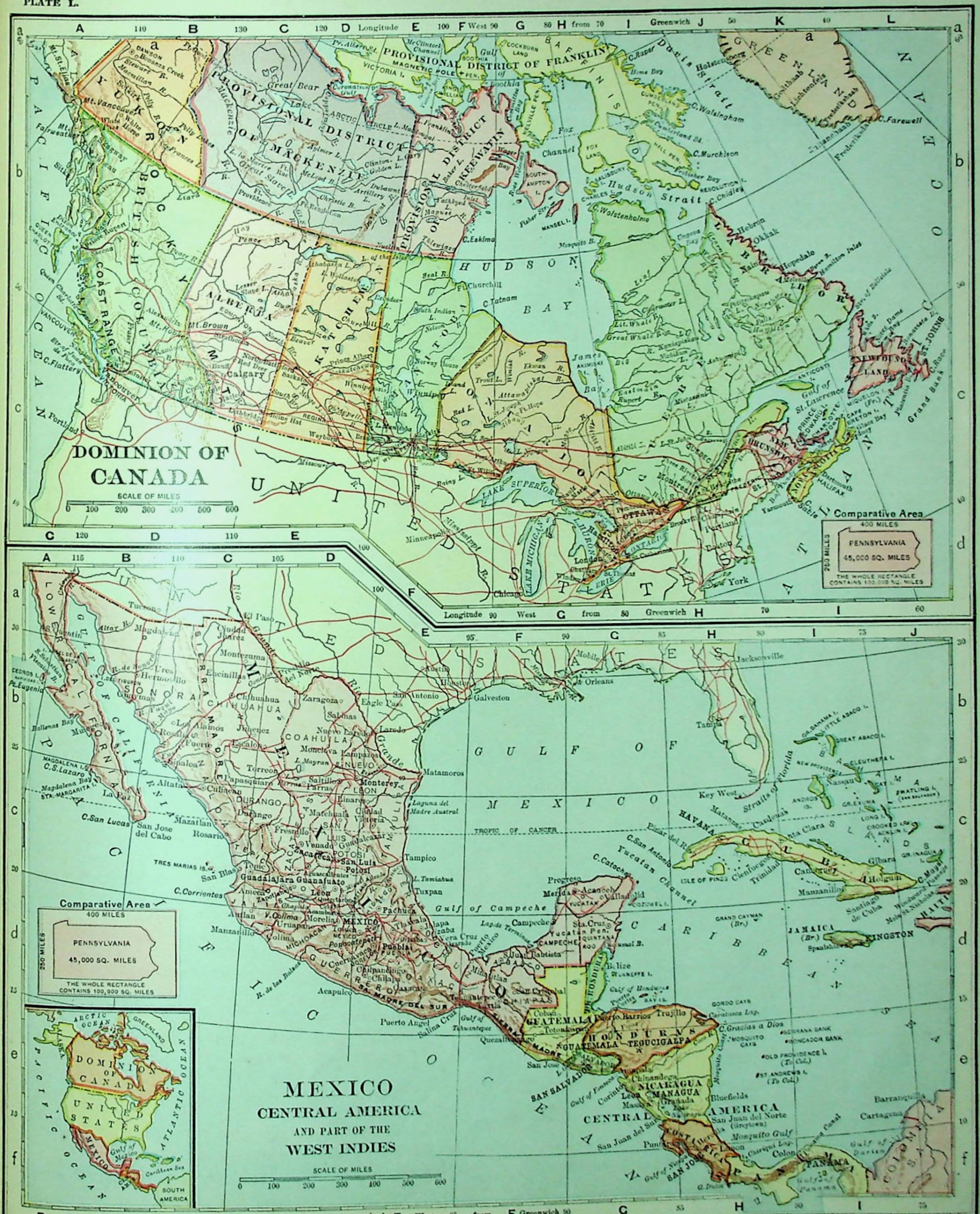
What does the relief map on page 62 show about the surface of Central America?

What country of Central America borders on Mexico? Which of the Central American countries reach from the Caribbean sea to the Pacific ocean?

Where is lake Nicaragua?

In what zone is Central America? Tell what you can about the climate of this zone.

PLATE L.

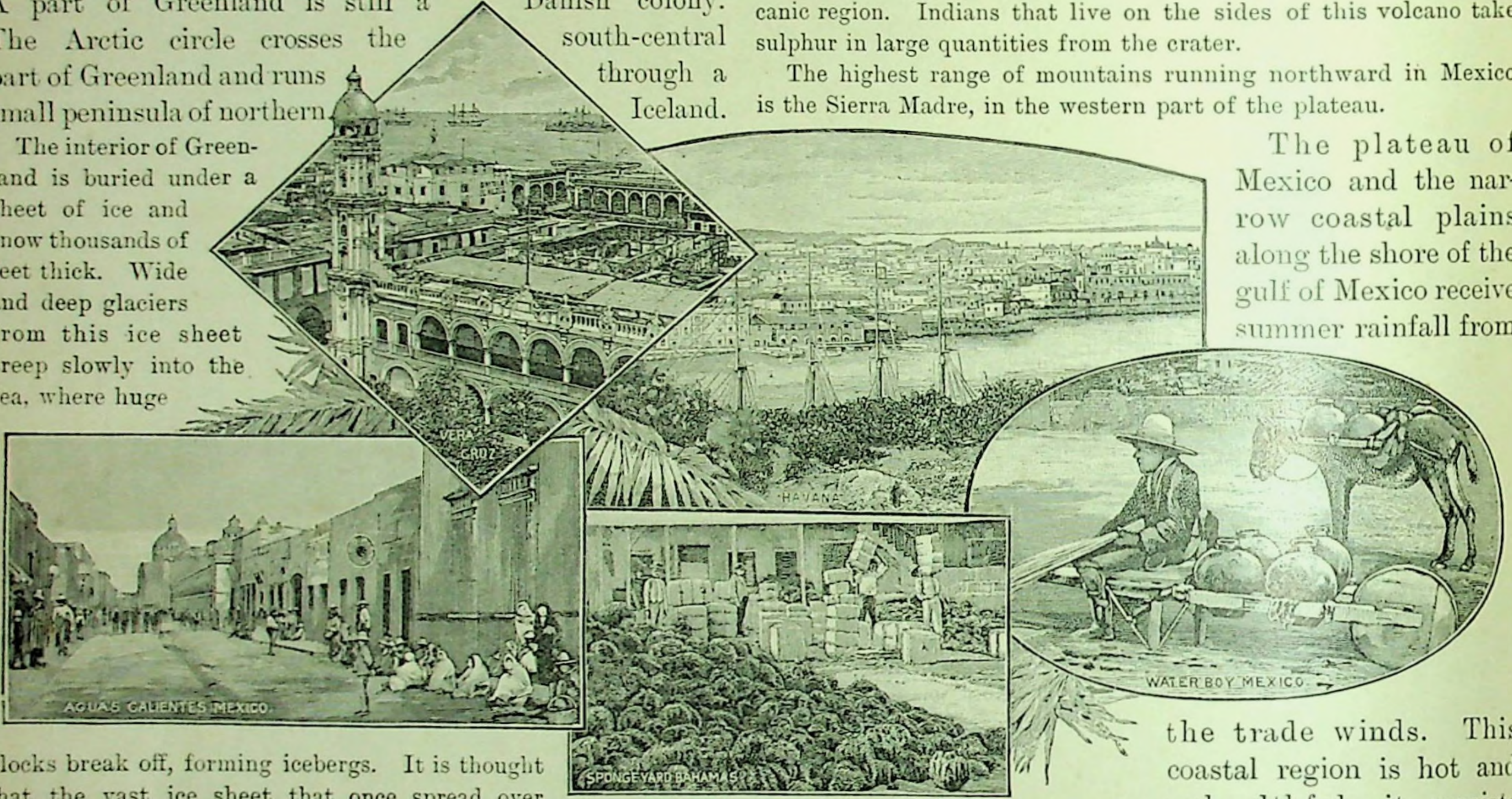

DOMINION OF CANADA
SCALE OF MILES
0 100 200 300 400 500 600
Comparative Area
400 MILES
250 MILES
PENNSYLVANIA
45,000 SQ. MILES
THE WHOLE RECTANGLE CONTAINS 100,000 SQ. MILES
Longitude West from Greenwich
YUKON
BRITISH COLUMBIA
ALBERTA
SASKATCHEWAN
MANITOBA
ONTARIO
QUEBEC
LABRADOR
NEWFOUNDLAND
NEW BRUNSWICK
NOVA SCOTIA
PRINCE EDWARD I.
PROVISIONAL DISTRICT OF MACKENZIE
PROVISIONAL DISTRICT OF KEEWATIN
PROVISIONAL DISTRICT OF FRANKLIN
BAFFIN LAND
GREENLAND
HUDSON BAY
Hudson Strait
Davis Strait
Fox Channel
James Bay
Gulf of St. Lawrence
PACIFIC OCEAN
ATLANTIC OCEAN
UNITED STATES
COAST RANGE
OTTAWA
Montreal
Quebec
Halifax
St. Johns
Winnipeg
Regina
Calgary
Vancouver
Victoria
Dawson
Prince Rupert
Toronto
Lake Superior
Lake Huron
Lake Michigan
Lake Ontario
Lake Erie
MEXICO
CENTRAL AMERICA
AND PART OF THE
WEST INDIES
SCALE OF MILES
0 100 200 300 400 500 600
Comparative Area
400 MILES
250 MILES
PENNSYLVANIA
45,000 SQ. MILES
THE WHOLE RECTANGLE CONTAINS 100,000 SQ. MILES
Longitude West from Greenwich
UNITED STATES
GULF OF MEXICO
Gulf of Campeche
CARIBBEAN SEA
PACIFIC OCEAN
GULF OF CALIFORNIA
LOWER CALIFORNIA
SONORA
CHIHUAHUA
COAHUILA
NUEVO LEON
DURANGO
SAN LUIS POTOSI
YUCATAN
CAMPECHE
CHIAPAS
GUERRERO
OAXACA
TROPIC OF CANCER
MEXICO
GUATEMALA
HONDURAS
TEGUCIGALPA
SAN SALVADOR
NICARAGUA
MANAGUA
COSTA RICA
SAN JOSE
PANAMA
COLOMBIA
CUBA
HAVANA
JAMAICA
KINGSTON
HAITI
BAHAMAS
Key West
Tampa
Jacksonville
New Orleans
Galveston
Mobile
ARCTIC OCEAN
GREENLAND
DOMINION OF CANADA
UNITED STATES
MEXICO
Gulf of Mexico
Caribbean Sea
PACIFIC OCEAN
ATLANTIC OCEAN
SOUTH AMERICA

British Columbia, like the state of Washington, has valuable coal mines, forests and fisheries. The chief cities of the province are **Vancouver** and **Victoria**. The latter is on Vancouver island.

Newfoundland and the provinces of Canada round the gulf of St. Lawrence have extensive fisheries. **Halifax** and **St. Johns** send large quantities of codfish to the United States. Most of these are caught on the Grand Bank, southeast of Newfoundland.

New Brunswick, like Maine, is in the soft-wood forest belt. The city of **St. John** exports lumber.

Iceland lies to the northeast of North America. It formerly belonged to Denmark, but it is now independent. A part of Greenland is still a Danish colony. The Arctic circle crosses the south-central part of Greenland and runs through a small peninsula of northern Iceland.



The interior of Greenland is buried under a sheet of ice and snow thousands of feet thick. Wide and deep glaciers from this ice sheet creep slowly into the sea, where huge blocks break off, forming icebergs. It is thought that the vast ice sheet that once spread over Canada, New England and the states round the Great Lakes *(see lesson 60)* was similar to that of Greenland to-day, only much larger.

A small current drifts northward from the Gulf stream to the southwest shore of Greenland and helps to make the climate milder there than over the rest of the great island. Eskimos and white people, the latter mostly Danes or people of Denmark, have built villages along the southwest coast.

Iceland is a volcanic island. Its inland region has large lava flows and is cold and barren. The inhabitants have made most of their settlements along the coast. They raise a few vegetables and have flocks of sheep. Eider ducks build their nests on this island as well as on Greenland, and the fine feathers, or *eider down*, with which they line their nests are of great value. Codfish and other food fish are caught in the waters around Iceland.

This island is remarkable for its volcanoes and geysers; one of the latter throws a column of water about 150 feet into the air. Mt. Hekla is the best known of the volcanoes of Iceland.

Topics: — Surface of Canada; Rocky mountain highland; Klondike district; peninsula of Labrador; Mackenzie river basin; most productive part of Canada; provinces and districts; government of Canada; area and population; products and cities of most thickly settled part of Canada; wheat region; British Columbia; Newfoundland and provinces round gulf of St. Lawrence; New Brunswick; location of Greenland and Iceland; interior of Greenland; southwest coast and people; interior of Iceland; people; products; volcanoes and geysers.

85. Mexico[1]

Nearly the whole of Mexico is a plateau region forming part of the Western highland of North America. The narrow southern end of the plateau of Mexico is about a mile and a half above sea level. A chain of lofty volcanoes extends east and west across this end of the highland.

Orizába is the highest of these peaks, though not nearly so high as Mt. McKinley. Popocatepetl is another high peak in this volcanic region. Indians that live on the sides of this volcano take sulphur in large quantities from the crater.

The highest range of mountains running northward in Mexico is the Sierra Madre, in the western part of the plateau.

The plateau of Mexico and the narrow coastal plains along the shore of the gulf of Mexico receive summer rainfall from the trade winds. This coastal region is hot and unhealthful; it consists largely of swampy lands, densely wooded. The western slopes of the highlands of Mexico are dry.

Part of Mexico is in the torrid zone and part is in the warm belt farther north; but because of height and nearness to the equator, the climate of the plateau of Mexico is mild and there are no long periods of great heat or cold. Millions of white people and Indians live in Mexico, chiefly in the plateau region where there is good farming and grazing land. Cattle raising is here a leading industry. Among the agricultural products are coffee, cotton, sugar cane and tobacco.

In some parts of Mexico, especially in Yucatan, is raised a variety of century plant that yields a kind of fiber known as sisal hemp. This hemp is shipped in large quantities to our country, where it is used in making rope and twine.

Mexico has rich mines of silver, copper and other minerals. The most valuable mines are near the Sierra Madre.

The leading exports from Mexico to the United States are silver, copper, oil and cattle. Our country sends cloth and hardware to Mexico. The trade is carried on largely across the Rio Grande, as well as through the ports of **Vera Cruz** on the east and **Acapulco** on the southwest.

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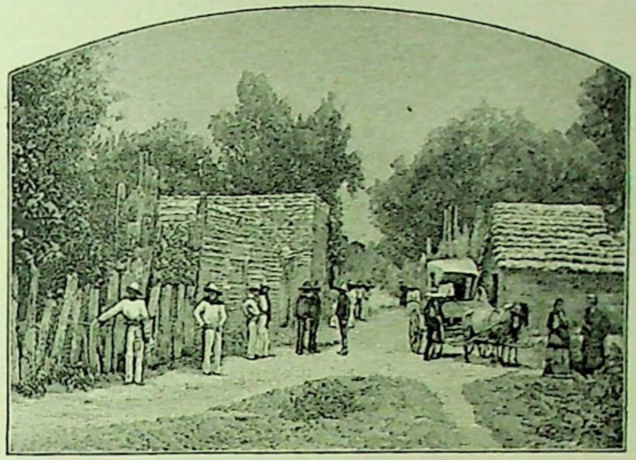
[1] See map studies on page 130.

Mexico, the capital and principal city of the republic, is situated in a beautiful hill-encircled valley nearly a mile and a half above sea level. It has a population about equal to that of San Francisco.


Mexican village

Mexico is a republic consisting of many states and territories. During the past twenty years the Mexicans have made great progress, especially in means of travel over the country. The most important cities are united by railroad lines.

Topics: — General surface of Mexico; volcanoes; Sierra Madre; climate of Mexico; people; products; exports and imports; city of Mexico; government.

86. Central America[1]

Most of Central America is rugged country. Its highest parts are ranges of volcanoes rising mainly along the Pacific border but branching inland.

The eastern coast lands of Central America receive plentiful rains from the trade winds; in summer this land has also rainfall from the equatorial rain belt.

Among the ranges of Central America are many upland valleys covered with fine and fertile soil. Many white people, Indians and Negroes live in these upland valleys.

In parts of Central America are found ruins of temples made by Indians who held the land when the white men first went there.

Central America consists of the six republics of Guatemala, Honduras, Salvador, Nicaragua, Costa Rica and Panama. Until 1903 Panama was part of Colombia, a country of South America. But Panama is now a republic and is included among the Central American states. *See pages 137 and 196.*

Water carrier, Mexico

A large part of the foreign trade of Central America is with the United States. These small tropical countries send us coffee, bananas, rubber, mahogany and indigo. In return our country sends them cloth and hardware.

Locate the following cities: **Guatemala, Managua, Leon, Bluefields, San Jose, Panama.**

British Honduras, a colony of Great Britain, has products similar to those of the Central American republics.

New York city has a population about equal to that of all Central America.

Topics: — Surface of Central America; rainfall; people; ruins; lake Nicaragua; republics; exports; imports; cities of Central America; British Honduras.

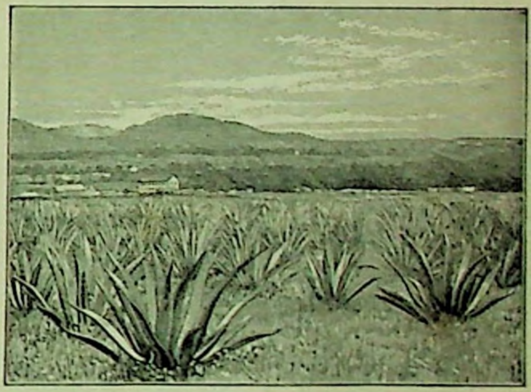
87. West Indies

The long chains of islands which separate the Atlantic ocean from the gulf of Mexico and the Caribbean sea are called the *West Indies.* These islands are in several groups, the northern being the *Bahamas;* next in order follow the great islands of Cuba, Haiti, Jamaica and Porto Rico, with their border islets, together forming the *Greater Antilles;* lastly, the many smaller islands of the *Lesser Antilles* extend from Porto Rico almost to the coast of South America.

At the close of the war with Spain, Porto Rico and its border islands were ceded to the United States; Cuba became a republic under the protection of our country.

Porto Rico. This island and some of the small neighboring islands have already been studied. *See lesson 82.*

Cuba. Cuba, the "Pearl of the Antilles," is the largest island of the West Indies. It is almost as large as Pennsylvania.


Century plants

The island may be roughly divided into three regions, — mountainous in the east, hilly in the middle, mostly level in the west or southwest. Its highest range follows the southeast coast. A few peaks rise about a mile and a half above sea level.

The coast of Cuba is largely fringed with coral reefs, rocks and sand bars, making navigation difficult; but there are many harbors that rank among the finest in the world. The Isle of Pines, or *Isla de Pinos,* is under the government of Cuba.

Cuba is in the torrid zone, and its lowlands have hot or warm weather almost all the year, with plentiful rainfall. The vegetation is luxuriant. Sugar cane and tobacco are the principal crops. Some coffee is raised. Oranges, pineapples, bananas and other fruits abound. The sweet potato is one of the most useful products of the island. Many parts have excellent pasture lands.

The shore waters and streams yield many kinds of food fish. Iron is found in the southeast part of the island.

There are more than two million people in Cuba, two thirds of them being of Spanish descent and the other third mostly Negroes, with several thousand coolies, or laborers from China and the East Indies. The people are peaceful and industrious. They are gathered chiefly in the coast cities and on the plantations of sugar cane and tobacco.

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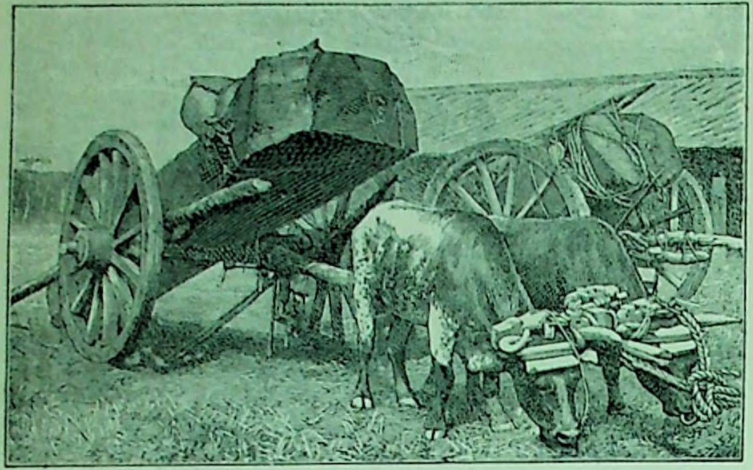
[1] See map studies on page 130.

Havana is the capital and largest city of Cuba. It contains about one sixth of the people of the island. This is also the railroad center as well as the chief port.

Havana owes its growth largely to its fine harbor, its nearness to rich plantations, its nearness to the United States, and the fact that it has long been the capital of the island. The greater part of its trade is with the United States. Its principal exports are cane sugar and tobacco. Most of its imports are manufactured articles.

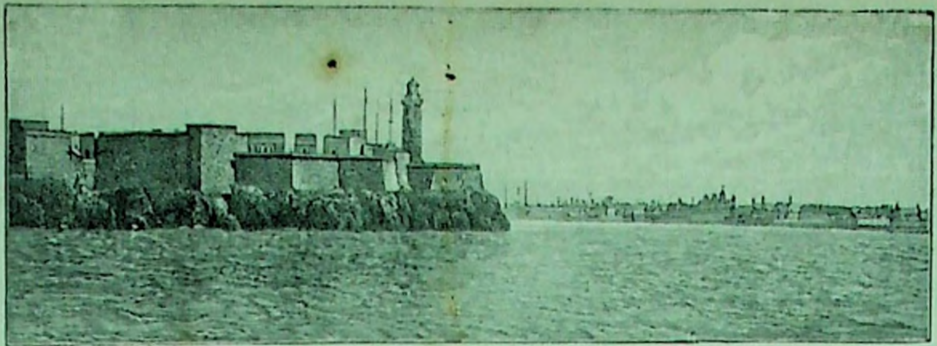
Santiago has a deep and spacious harbor and is the leading port of the eastern province. It exports sugar. This city is on one of the deepest and best-sheltered harbors in all America.


Hauling mahogany logs, Cuba

With the destruction of the Spanish fleet when trying to escape from Santiago harbor during the late war, and with the surrender of Santiago itself, the power of Spain in the New World was broken.

The other principal ports of Cuba are **Cienfuegos**, on the south coast, and **Matanzas** and **Cardenas**, on the north coast east of Havana. All these ports ship immense quantities of sugar.

Among the most important inland cities of the island are **Camaguey** and **Santa Clara**. These cities are reached by railroads from the coast.


Morro castle, entrance to Havana harbor

Other Islands. The climate and products of the other islands of the West Indies are similar to those of Cuba and Porto Rico.

The Bahama islands, Jamaica, Barbados and most of the Leeward and Windward islands belong to Great Britain, though some of the smaller islands belong to other nations of Europe. **Nassau** is the chief port of the Bahamas; and **Kingston**, of Jamaica.

The island of Haiti comprises the two small republics of Haiti and Santo Domingo. There are nearly as many people in the island of Haiti as in Cuba. The republic of Haiti is settled chiefly by Negroes; Santo Domingo has a mixed population of Negroes and people of Spanish descent. The latter outnumber the former. **Port au Prince**, in Haiti, and **Santo Domingo**, in the eastern republic, are the principal cities of the island.

Cutting sugar cane, Porto Rico

Bermuda is the name given to a group of islands far to the northeast of the Bahamas. They belong to Great Britain. These islands are a noted health resort, as they have a very even climate.

When white men first went to the West Indies they found there none of the great mammals so common elsewhere in America. Of course the islands are now well stocked with domestic animals. Birds of beautiful plumage are plentiful. Fish and turtles abound and are valuable food products.

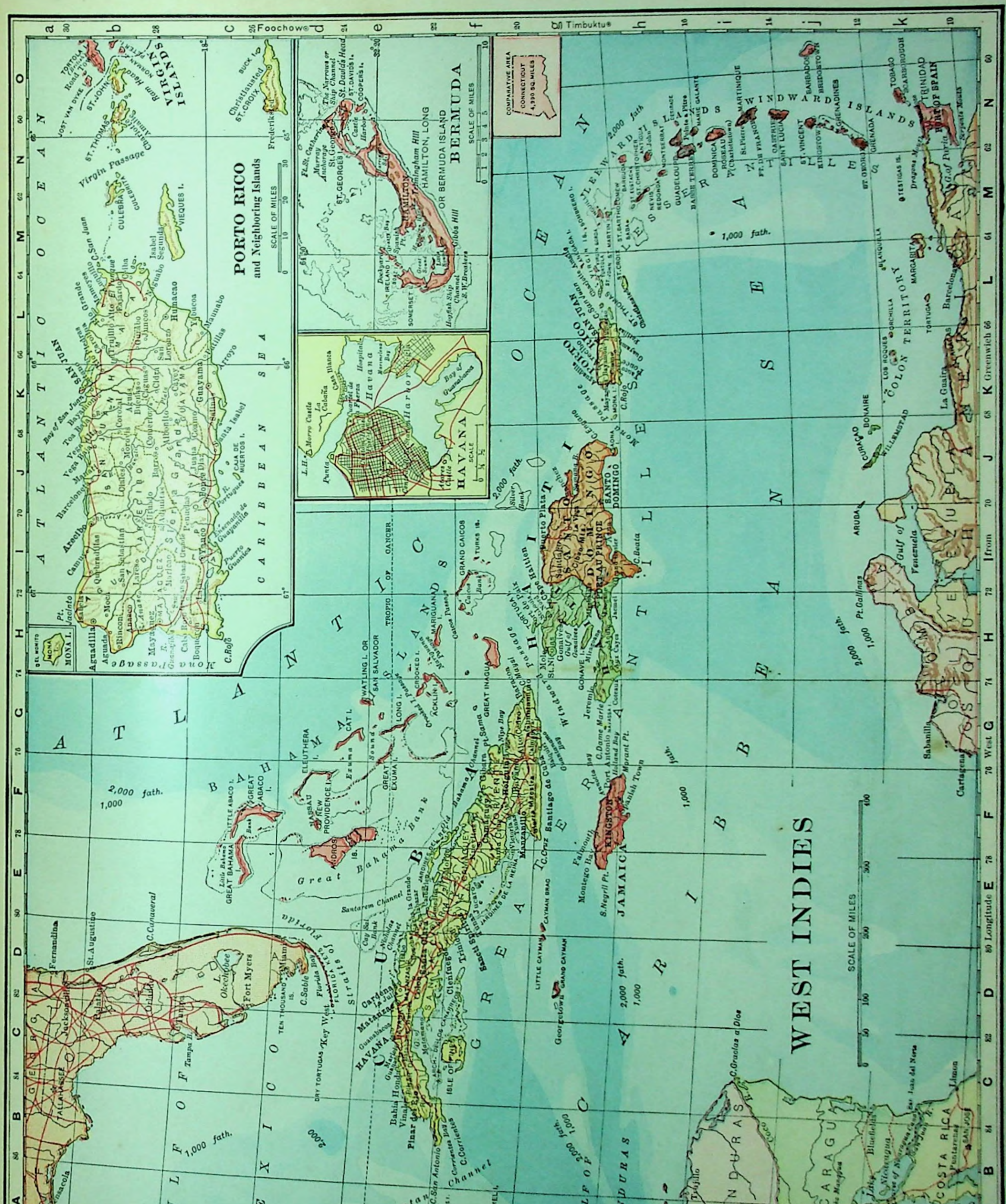
The early explorers in the West Indies found many tribes of peaceful Indians, numbering more than a million people. During the first hundred years of white rule this vast population almost disappeared. Other Indians were imported only to die in slavery. After a time large numbers of African Negroes were taken there as slaves, to work on the coffee, sugar and tobacco plantations. Slavery no longer exists in the islands.

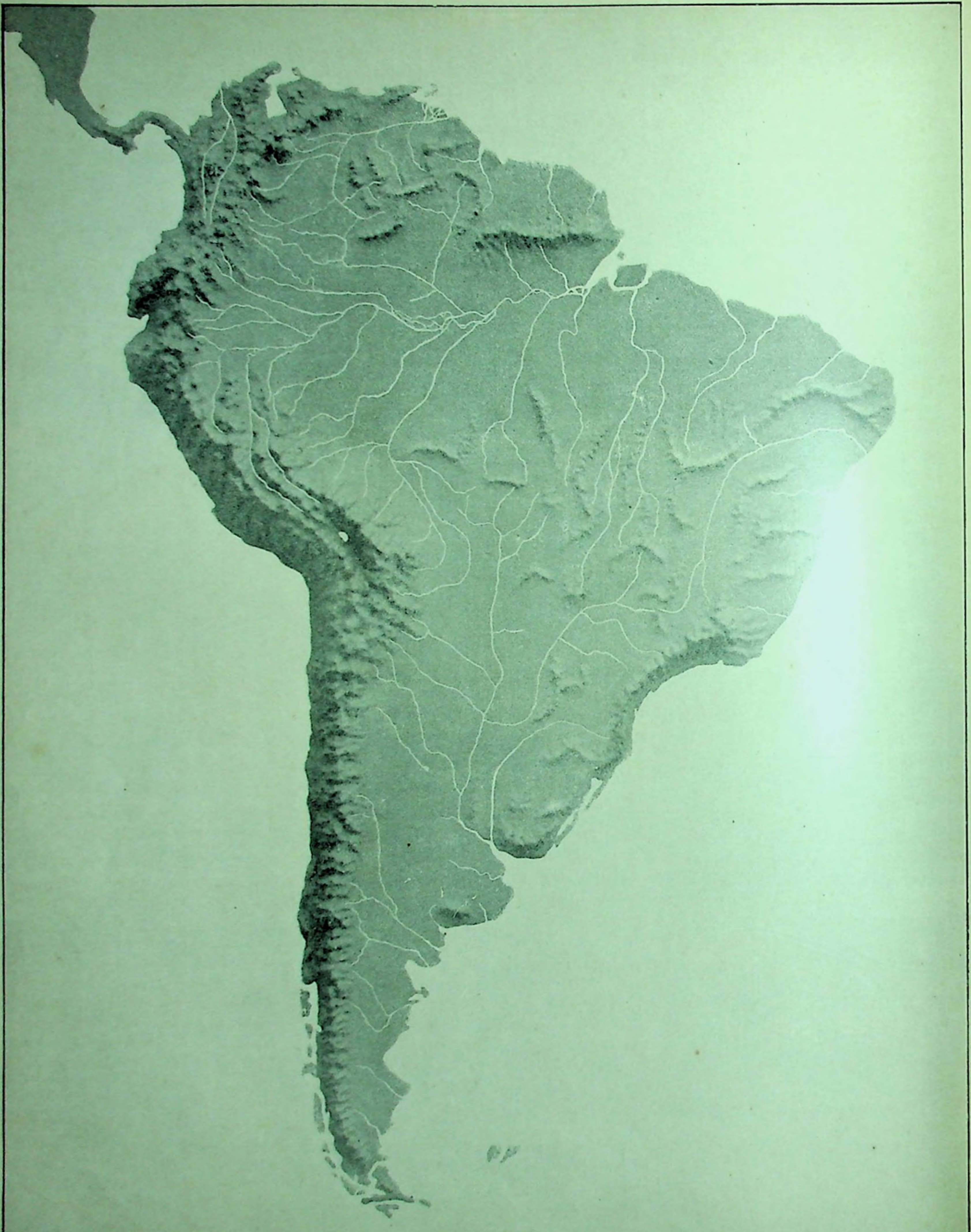
Scene in a Cuban village

Topics: — Groups of islands forming West Indies; Cuba, — its size, surface, coast, climate, products, people, government, cities; possessions of Great Britain in West Indies and their seaports; republic of Haiti; republic of Santo Domingo; seaports; Bermuda.

Map Studies: — What is the general name given to the islands southeast of the United States? Name the largest of these islands; next in size. Locate Jamaica; the Bahama islands; the Windward islands; the Leeward islands.

What tropic runs a little north of Cuba? In what zone is Cuba? Porto Rico?


WEST INDIES
PORTO RICO and Neighboring Islands
BERMUDA
HAVANA
VIRGIN ISLANDS
ATLANTIC OCEAN
CARIBBEAN SEA
GULF OF MEXICO
BAHAMA ISLANDS
CUBA
JAMAICA
HAITI
SANTO DOMINGO
PORTO RICO
LEEWARD ISLANDS
WINDWARD ISLANDS
GREATER ANTILLES
LESSER ANTILLES
HONDURAS
NICARAGUA
COSTA RICA
COLOMBIA
VENEZUELA
COLON TERRITORY
FLORIDA
Straits of Florida
Yucatan Channel
Windward Passage
Mona Passage
Gulf of Honduras
Gulf of Venezuela
HAVANA
KINGSTON
PORT AU PRINCE
SAN JUAN
NASSAU
HAMILTON
PORT OF SPAIN
BRIDGETOWN
TRINIDAD
TOBAGO
BARBADOS
MARTINIQUE
GUADELOUPE
DOMINICA
ST. LUCIA
ST. VINCENT
GRENADA
CURAÇAO
BONAIRE
ARUBA
TROPIC OF CANCER
COMPARATIVE AREA CONNECTICUT 4,990 SQ. MILES
SCALE OF MILES
West 80 Longitude from Greenwich
Foochow
Timbuktu
Mexico
Manila



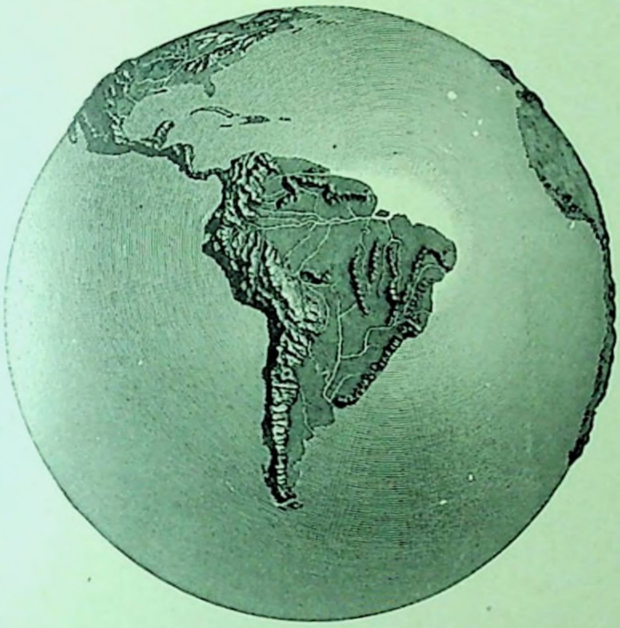
RELIEF MAP OF SOUTH AMERICA

88. Andes Highland

Review lesson 14 and tell what you can about the highlands and lowlands of South America.

The isthmus of Panama joins the two parts of America. This hilly neck of land is only about thirty miles wide. A railroad crosses from shore to shore. Panama seceded from Colombia and became a republic. By treaty Panama sold to the United States the right to dig a ship canal across the isthmus to join the two oceans. This canal belongs to our country. The corner inset map on page 139 shows the railroad and canal routes.

The Andes highland extends about one fifth of the way round the earth. It consists mainly of a great mountain system, with many long and high valleys between its ranges. In Colombia the Andes divide into three main ranges. The long valleys between them are drained by the Magdalena river and its branches; the main stream is navigable for many miles from the sea and is the chief waterway in this country.



Southward towards Ecuador the mountains unite in a massive chain near the coast. In this chain are many noted volcanoes.

One of the most important of the high valleys of the Andes is that of Quito, a little less than two miles above sea level. A group of large volcanoes, some of which are very active, surrounds this valley. Of these, Cotopaxi is the loftiest *active* volcano known. It is about twice as high as the floor of the valley in which the city of Quito has been built. The summit of its great cone is buried in snow and is often hidden by clouds.

Another famous peak is Chimborazo, higher than Cotopaxi, but not active. Many earthquakes occur in this volcanic region.

(*Continued on page 138.*)

Map Studies:—In what direction is South America from North America? What oceans lie east and west of both? What gulf and sea are between the two continents? On which side of the equator is the greater part of South America? Across what great river basin of this continent does the equator extend? Sketch the general outline of South America, using only three straight lines. In what general direction does the north coast extend? The east coast? The west coast? Which coast is the longest?

Draw the Pacific coast of South America. Which is the more regular, the west coast of North America or that of South America?

For drawing and modeling, see *guide map* in the supplement.

Draw the north and east coasts of South America. What great peninsula of the United States is in about the same longitude as the isthmus of Panama?

What have you learned about the Andes highlands? *See lesson 14.* In what direction does this highland extend? Which coast does it follow? Which part of the highland looks highest on the map?

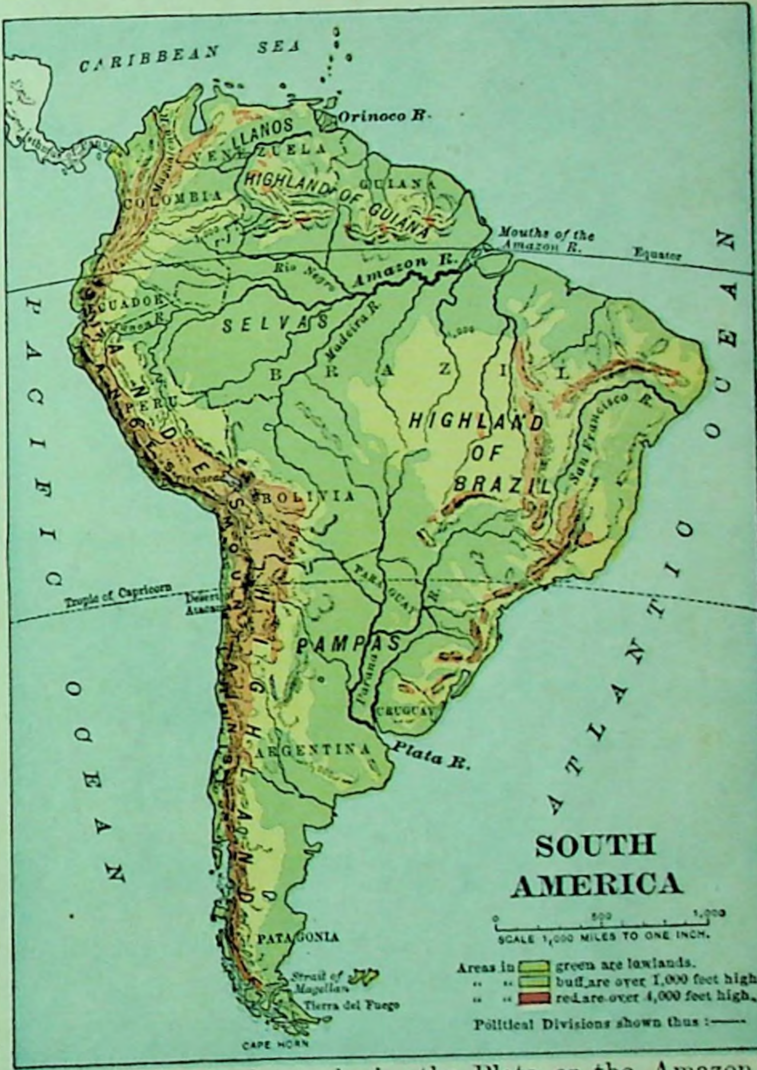
Where is the plateau of Bolivia? What lake is on this plateau?

Where is the highland of Brazil? Compare it with the Andes highland, in length, in width, in shape. Compare the Brazilian and Appalachian highlands in width and shape as shown on the relief map. What does lesson 14 tell about the highland of Brazil?

Where is the highland of Guiana? Is it larger or smaller than the highland of Brazil?

On which side of the Andes is the great plain of South America? What part of this plain is drained by the Orinoco river? By the Amazon river? By the Plata river?

What have you learned about the selvas? *See lesson 14.* About the Amazon river? In what zone is the basin of the Amazon? Name a large branch that enters the Amazon from the south; one from the north. What does lesson 14 tell about the pampas?



Which river drains the larger basin, the Plata or the Amazon? Where are the llanos? *See lesson 14.* What river drains the llanos? What highland partly separates the selvas from the llanos? The selvas from the pampas and other parts of the Plata basin?

Compare the Central plains of North America and South America as follows: What great highland is on the west of each? Into what ocean do most of the large rivers flow? What large river system drains the southern part of each of these plains? The northern part? The central or north-central part?

What river drains part of the northern Andes and flows into the Caribbean sea? Where is the San Francisco river? Where are the Organ mountains?

Locate the Falkland islands; the island of Tierra del Fuego; the strait of Magellan; cape Horn; the gulf of Guayaquil; the Galapagos islands; the island of Juan Fernandez.

In which zone does the greater part of South America lie? In which zone is the other part? What does lesson 21 say about the seasons of the torrid zone? The south temperate zone?

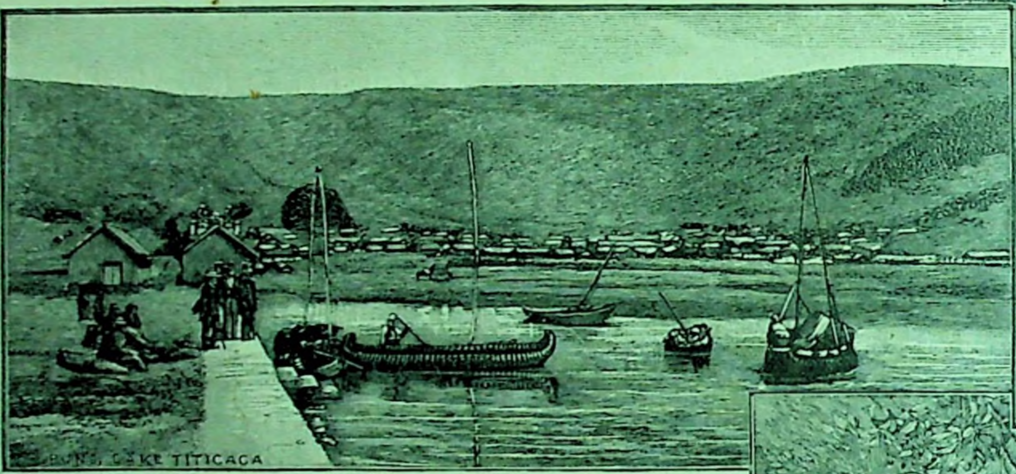
The highest and widest part of the plateau of the Andes is in Peru and Bolivia. This is the highest plateau in America and is bordered both on the east and the west by lofty ranges. It averages about 12,000 feet in height and is three times as high as the Great Basin of North America. Gold, silver, tin and copper abound in the Andes.

Lake Titicaca (*see lesson 14*) is in this plateau between Peru and Bolivia. This is the largest lake in South America and is the loftiest *large* body of water in the New World, but some of the lakes in the highland of Tibet are still higher. Steamboats navigate the lake, and a railroad leads down to the coast. The steamers and the cars connect at the town of Puno, which is shown in one of the pictures on this page.

Although high, this plateau is too near the equator to be very cold, but the tops of the mountains rising above it are buried in snow. This region yields much silver ore.

For more than a thousand miles along the west slope of the middle Andes stretches a region known as the *rainless coast*. The desert of Atacama, at the southern end of this dry belt, merges into the fertile plains of central Chile.

The Andes chain between Chile and Argentina is narrow but very high.


PUNO, LAKE TITICACA

Years ago the journey across this highland between the two countries was made on mules or on horses, but trains now cross the Andes through the mountain passes.

The pass shown in one of the pictures on this page is not far from the giant volcanic cone of Aconcagua and is two miles and a half above sea level. There are many other volcanoes in this region, and earthquakes are common.

The Andes chain in southern Chile has settled partly beneath the sea. The water flowing into the valleys has made many bays and straits around the southern end of the continent; some of the ridges and peaks that the sea did not entirely cover form a fringe of islands.

Cape Horn is on one of these rocky islands. Near this cape the sea is often made very rough by the strong westerly winds. For this reason, steamships go through the strait of Magellan instead of rounding the cape. Small bands of Indians and the few colonies of white people live on the islands south of this strait.

The Falkland islands, a few hundred miles to the eastward of the strait of Magellan, belong to Great Britain.

Topics: — Andes in Colombia; Magdalena river; Andes in Ecuador; valley of Quito; Andes in Peru and Bolivia; lake Titicaca; desert of Atacama; minerals in Andes; niter; Andes in Chile and Argentina; southern part of Andes; strait of Magellan; Falkland islands.

Map Studies: — What river system drains the greater part of Brazil? What name is given to the highland in the southeast part of the country? What small highland lies along the northern border? What does the relief map of South America show about the surface of Brazil?

What city of Brazil is near the tropic of Capricorn? A little south of the equator? In what part of Brazil are Bahia and Pernambuco? Name two small countries in the Plata basin. Which of these countries is on the seacoast?

What country in the southern part of this continent lies between the Atlantic ocean and the Andes mountains? Between the same mountains and the Pacific ocean? What large river flows across the northeast part of Argentina and enters the Plata river? Locate the city of Buenos Aires. What does the map show about the southern part of the coast of Chile? Where is the desert of Atacama? Between what two countries does lake Titicaca lie? What does the relief map show about the surface of Peru and Bolivia? What country is east of Bolivia? Name a large branch of the Amazon flowing out of Bolivia. Name two countries of South America having no seacoast. From what country does the Maranon branch of the Amazon flow? Name three countries of South America crossed by the equator. Which of these countries is nearest the isthmus of Panama?

USPALLATA PASS

GATHERING PERUVIAN BARK

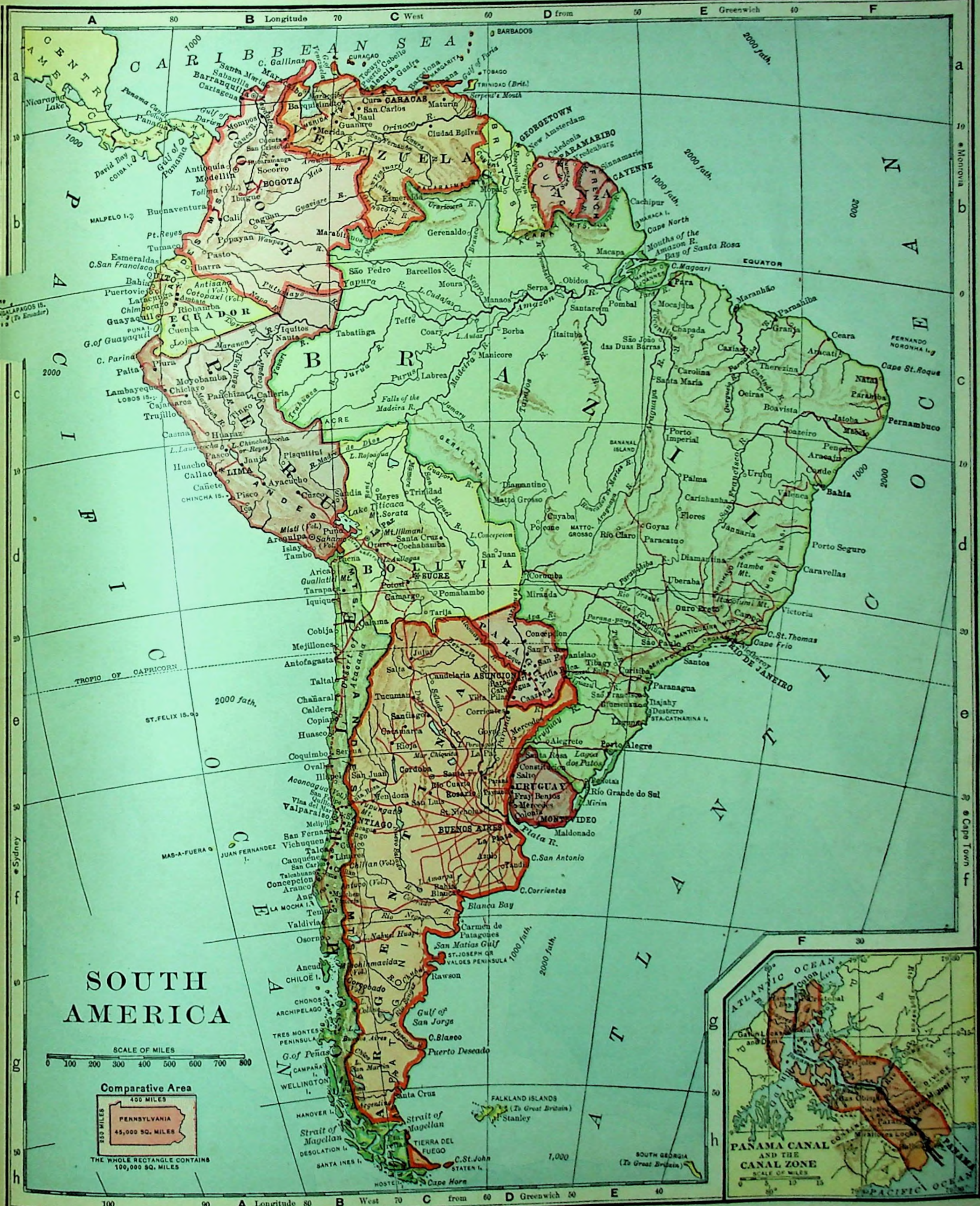
Bolivian

In what country is lake Maracaibo? What river occupies most of the lowlands of Venezuela? What highland partly separates Venezuela from Brazil?

What three nations of Europe govern the three parts of Guiana? What countries of South America lie wholly north of the equator?

Beginning at the isthmus of Panama, name in order the countries crossed by the Andes highlands. Beginning at the same isthmus, name the countries bordering on the Atlantic ocean. What countries of South America do not form part of the boundary of Brazil?

What do lessons 25 and 28 tell about the people of South America? What have you learned about the religions of South America? *See lesson 29.* About the governments? *See lesson 30.*


SOUTH AMERICA
SCALE OF MILES
0 100 200 300 400 500 600 700 800
Comparative Area
400 MILES
250 MILES
PENNSYLVANIA
45,000 SQ. MILES
THE WHOLE RECTANGLE CONTAINS
100,000 SQ. MILES
A 80 B Longitude 70 C West 60 D from 50 E Greenwich 40 F
100 90 A Longitude 80 B West 70 C from 60 D Greenwich 50 E 40
CARIBBEAN SEA
PACIFIC OCEAN
ATLANTIC OCEAN
CENTRAL AMERICA
COLOMBIA
VENEZUELA
BRITISH GUIANA
DUTCH GUIANA
FRENCH GUIANA
ECUADOR
PERU
BRAZIL
BOLIVIA
PARAGUAY
URUGUAY
ARGENTINA
CHILE
PATAGONIA
EQUATOR
TROPIC OF CAPRICORN
2000 fath.
1000 fath.
BARBADOS
TRINIDAD (Brit.)
TOBAGO
CURAÇAO
GALAPAGOS IS. (To Ecuador)
MALPELO I.
COIBA I.
LOBOS IS.
CHINCHA IS.
ST. FELIX IS.
JUAN FERNANDEZ I.
MAS-A-FUERA
LA MOCHA I.
CHILOE I.
CHONOS ARCHIPELAGO
TRES MONTES PENINSULA
G. of Peñas
CAMPANA I.
WELLINGTON I.
HANOVER I.
Strait of Magellan
DESOLATION I.
SANTA INES I.
TIERRA DEL FUEGO
STATEN I.
C. St. John
HOSTE I.
Cape Horn
FALKLAND ISLANDS (To Great Britain)
Stanley
SOUTH GEORGIA (To Great Britain)
FERNANDO NORONHA I.
Cape St. Roque
Monrovia
Cape Town
Sydney
CARACAS
BOGOTA
QUITO
LIMA
SUCRE
La Paz
ASUNCION
BUENOS AIRES
MONTEVIDEO
SANTIAGO
RIO DE JANEIRO
GEORGETOWN
PARAMARIBO
CAYENNE
Amazon R.
Orinoco R.
Madeira R.
Parana R.
Uruguay R.
Plata R.
Lake Titicaca
Panama
Colon
Cartagena
Barranquilla
Maracaibo
Valparaiso
Concepcion
Antofagasta
Iquique
Arica
Callao
Guayaquil
Cuzco
Arequipa
Manaos
Para
Bahia
Pernambuco
Santos
Sao Paulo
Porto Alegre
Rosario
Cordoba
Tucuman
Mendoza
La Plata
Bahia Blanca
Punta Arenas
Santa Cruz
Rawson
Aconcagua (Vol.)
Chimborazo
Cotopaxi (Vol.)
ANDES MTS.
PANAMA CANAL AND THE CANAL ZONE
SCALE OF MILES
0 5 10 15
ATLANTIC OCEAN
PACIFIC OCEAN

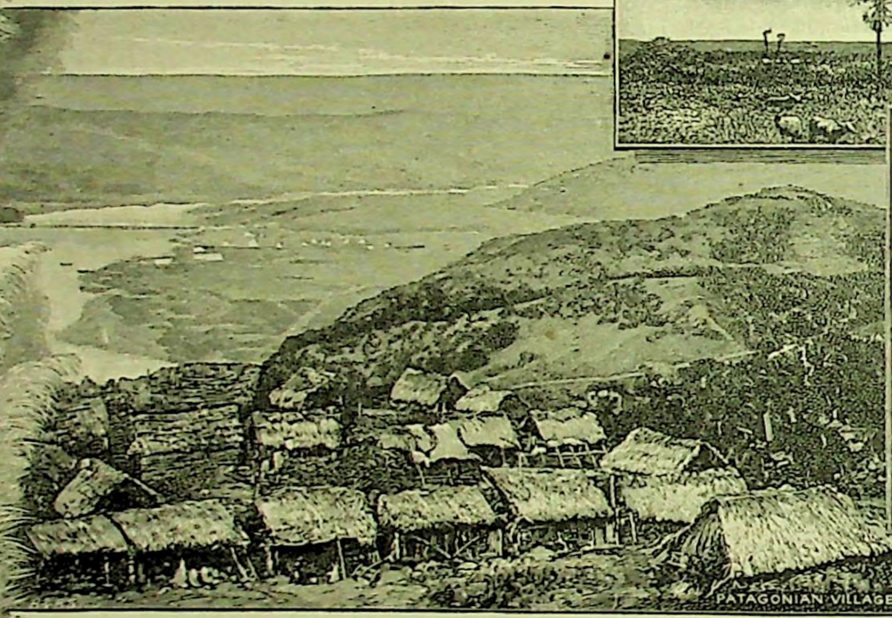
89. Highlands of Brazil and Guiana

The highland of Brazil is shaped like a triangle, with one side lying along the east coast. This coastal part is the highest. As a whole, the highland of Brazil has only about one sixth the altitude of the Andes.

The greater part of this highland is a low plateau, from the middle of which long rivers flow northward or southward. Rapids and falls abound in most of the streams and make them unfit for waterways. Except in the middle portion of the highland the streams have worn deep and wide valleys in the plateau, leaving long ridges between them.

The coast ranges of Brazil turn many river branches inland. These streams reach the sea by flowing round the ends of the ranges. Thus, the San Francisco river winds northward through a wide valley a thousand miles long before it finds an opening to the sea. Branches of the Parana also are turned inland by the coast ranges farther south and reach the sea through the broad mouth of the Plata river.

Pampas plumes



PATAGONIAN VILLAGE

The Guiana highland is, for the most part, a low and much-worn plateau, with flat-topped hills and mountains rising in high cliffs. The general trend of these mountains is parallel with the Amazon river.

Topics: — Highland of Brazil and Andes; surface of highland of Brazil; rivers; Guiana highland.

90. Selvas, Pampas and Llanos

The slopes east of the crest of the Andes are mainly in three great river basins. The divides between these basins are the highlands of Brazil and Guiana.

The highest parts of the basin of the Amazon are in the Andes; the lowest parts are in swamps along the coast. This river basin includes about one third of the continent. No other river in the world drains so much land as the Amazon, or carries so much water to the ocean.

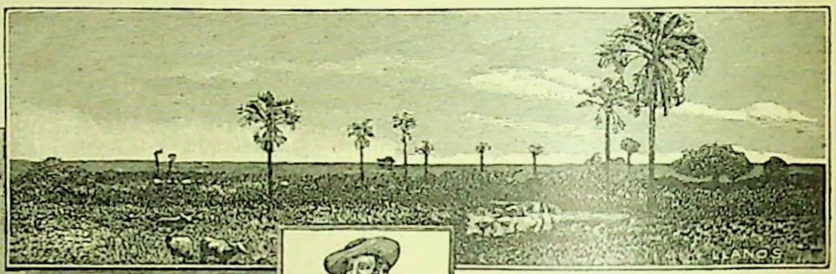
Steamers go up the Amazon from the sea to the foothills of the Andes; also up some of the larger tributaries. The length of navigable streams in the Amazon system is greater than the distance round the earth.

This is one of the great rivers that make flood plains. The streams in this valley are sluggish, and in times of overflow very fine mud settles in the lowlands. In the rainy season some of the streams rise thirty or forty feet and spread far and wide over the flood plains.

The main branches of the Amazon are the Madeira on the south, and the Negro on the north.

What does lesson 14 tell about the selvas?

The forests, or *selvas* of the Amazon valley, are found mainly on the flood plains that extend many miles from the stream. These are the largest forests in the world.



LLANOS

GAUCHO

Long vines hang from the trees, and reeds and rushes grow in the wet soil, forming a network so thick in some places that one cannot pass through without first cutting a path. Tree ferns and palms in great variety grow in the selvas. What does lesson 25 tell about the Indians that live in this valley?

The Plata river valley includes most of the region south of the Amazon valley. The former is only about one half as large as the latter. The main stream is the Parana river, which flows into the broad Plata river.

The lowlands of the Plata basin are called *pampas*, meaning *fields*. The pampas extend also far south of the Plata basin and form one of the best grazing regions in the world. The greater part of this region is a coastal plain.

Many of the rivers that flow from the Andes towards the pampas dwindle away in the plains and do not reach the sea, because the rainfall there is light and the water evaporates or sinks into the sandy soil. Great plains of sand and gravel extend southward from the pampas to the strait of Magellan. These are known as the plains of Patagonia. There are fertile lands in the flood plains of the streams that cross this plain.

The *llanos*, or plains of the Orinoco, spread round the Guiana highland on the north and west. This level land was formed under the sea and rose as a level coastal plain.

The Orinoco rises in the Guiana highland and flows round the western end of this highland on the way to the sea. This is one of the rivers that are making large deltas.

The divides between the three great river basins of this continent are so low in places that the eye cannot detect the slope.

On the upper Parana river, where Brazil, Argentina and Paraguay unite, there is a cataract which in some respects is grander than the falls of Niagara. It is known as the falls of Iguazú. In one place the water plunges down 210 feet into a narrow gorge.

Topics: — Three river basins of South America; size of Amazon basin; navigable streams; flood plains; selvas; Plata river basin; pampas; plains of Patagonia; llanos; Orinoco; divides.

91. Climate

Refer to the maps on page 28 and tell which river basins and highlands of South America are wholly or partly within the torrid zone. What desert of this continent is crossed by the tropic of Capricorn?

In what belt of winds are the Andes of middle and southern Chile? *See maps on page 31.* Study the maps on page 31 and tell in what season the equatorial rain belt is over the Orinoco basin; over the southern half of the Amazon basin.

From over what ocean do the rain-bearing winds blow into the Amazon valley? Over the highland of Brazil?

Study the map of ocean currents on page 32 and state against which coast of South America cold currents of water flow; warm currents. What effect must the ocean currents have on the westerly winds blowing inland over Chile? On the trade winds blowing over the tropical portion of South America?

The greater part of South America has the hot or warm climate of the torrid zone. Only the narrow southern part extends as far south as the cool belt.

The northern and middle parts of South America are in the path of the trade winds and as a rule have plentiful rainfalls, except on the western slope of the Andes. The southern part of the continent, beyond the tropic of Capricorn, is mostly in the path of the westerly winds which give rains to the western slopes of the Andes.

A cold polar current flows northward in the Pacific, past the coast of Chile. The westerly winds that blow inland over Chile are cooled by this current. Becoming warmer as it approaches and enters the torrid zone, the current passes the coast of Peru and then mingles with the vast equatorial current that flows westward across the Pacific.

The maps on page 31 show that in summer the equatorial rain belt is north of the equator and gives plentiful rainfall to the llanos, but south of the equator during the northern winter, leaving the llanos dry in that season.

The Orinoco valley well illustrates the effect of the shifting of the equatorial rain belt north and south of the equator. When the sun is north of the equator the llanos are visited by the rain belt, with its almost daily rains. The rivers are then swollen by heavy rains and spread far and wide over their flood plains. Immense herds of cattle and droves of sheep feed on the rich grass which springs up all over the wet plains. The region then teems with life.

As the sun's rays become more and more slanting, the rains leave the llanos and move southward. The overflow in the lowland is slowly drained off. The rivers then grow smaller and shrink away from their banks. The smaller streams leave only parched beds, with here and there muddy pools.

During the dry season a great change takes place in the life on the plains. Hot trade winds scorch the grass and other plants. They die down to the roots and thus await the return of the rains. Turtles and snakes bury themselves in the mud. The cattle and the sheep move into the flood plains or are driven to the grass lands among the border foothills. The plain becomes almost a desert.

The time of heaviest rainfall over the highland of Brazil and the greater part of the Amazon valley is during the southern summer, though most parts of the region are well watered throughout the year.

Topics: — Part of South America in torrid zone; in warm belt; in cool belt; winds of South America; effect of ocean currents; equatorial rain belt; wet and dry seasons in Orinoco valley.

92. Plant Life

The plant regions of this continent may be roughly divided into the great forest areas in the valley of the Amazon and on the slopes of the Andes; and the grass lands of the Plata basin, the highland of Brazil and the Orinoco basin.

Among the important trees of the northern and middle Andes are the cacao, from the fruit of which cocoa and chocolate are made, and the cinchona tree, from the bark of which the bitter medicine called *quinine* is made. *See picture on page 138.*

Large rubber trees and dyewoods grow near the hot and moist banks of the Amazon.

Rosewood trees also grow in the selvas. Piano cases, chairs and tables are often carved from rosewood, because it takes such a fine polish. Wood that is used in making choice furniture is called *cabinet wood.* Many kinds of trees in Brazil supply beautiful cabinet woods.

Many useful plants are raised in the highland of Brazil, chiefly in the rainy eastern part. Among these are coffee, sugar cane, cotton and cassava.

Coffee is the leading product in this region. What does lesson 14 tell about coffee?

The coffee of Brazil grows best on the warm and rainy slopes of the low hills and the plateau at quite a distance from the Atlantic coast.

Cassava is one of the chief articles of food used by poor people in Brazil. Tapioca is made from the root of this plant.

Pepper and other spices are raised in the Guianas. Coffee, sugar cane and bananas are produced in all the countries in the northern part of this continent.

The grass lands in the Orinoco valley, the highland of Brazil and the Plata valley support millions of cattle, horses and sheep.

The valley of the Plata river and the narrow plain of middle Chile produce immense quantities of wheat, corn and other grains.

Topics: — Forests and grass lands; trees of selvas; products of highland of Brazil; spices; products of countries along northern coast; best grazing regions; products of Plata valley and Chile.

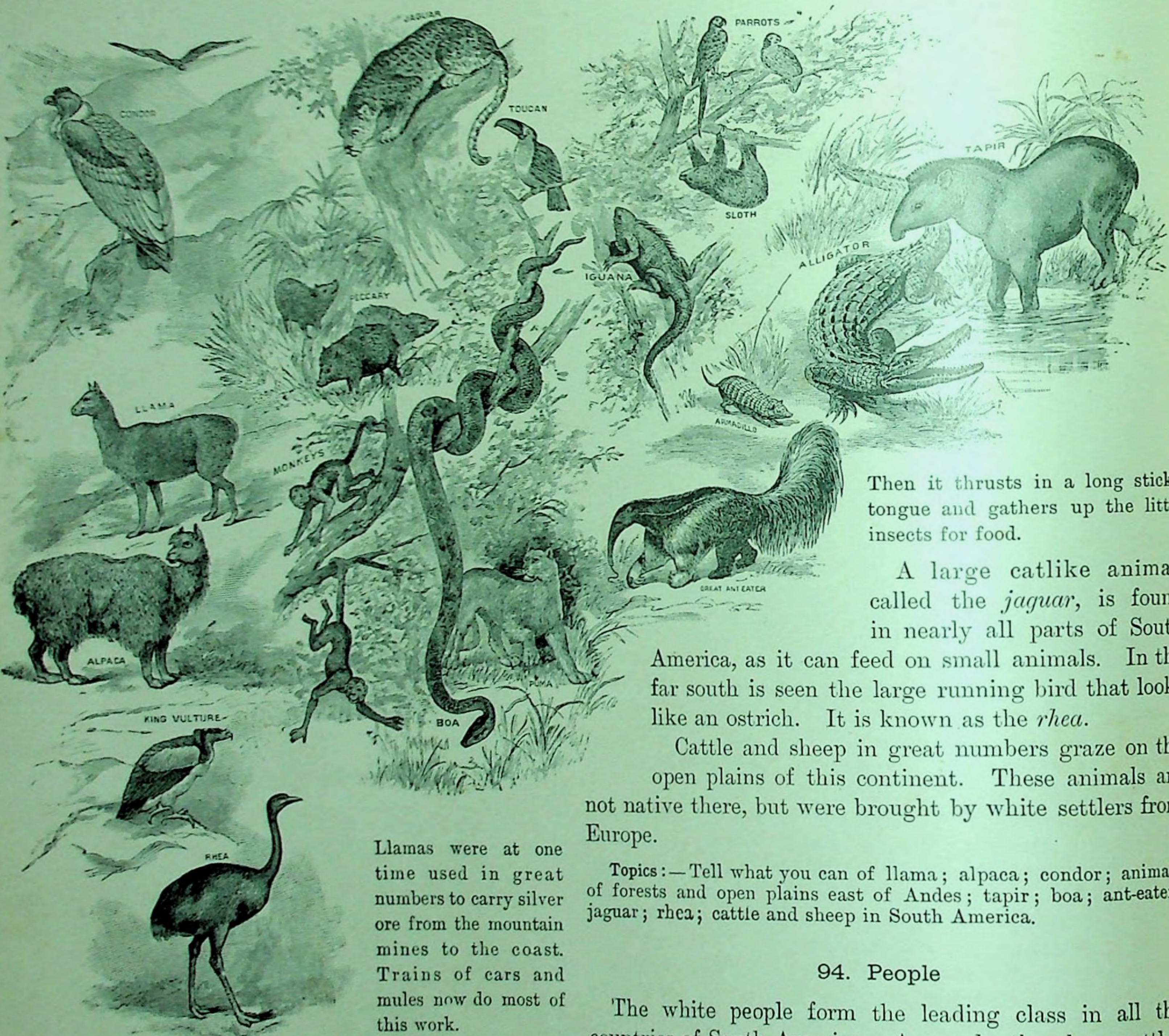
93. Animal Life

In the lofty highland along the west coast of South America are found two animals, the llama and alpaca, that belong to the same family as the camel.

These animals well illustrate how the parts of the body adapt the creature to its home. In place of soft pads to protect their feet from hot sand they have tough pads on their feet, to help them climb rocky places, where they go to find grass.

The cool climate of the mountains cannot harm these two animals, for they are covered with wool.

Large flocks of alpacas are kept for their wool by the people living in the mountains. This is clipped and woven into cloth.



Llamas were at one time used in great numbers to carry silver ore from the mountain mines to the coast. Trains of cars and mules now do most of this work.

The condor, largest of flying birds, is often seen among the peaks of the Andes. This bird is so strong that it sometimes kills sheep and deer that graze in the mountain valleys.

In the forests and grassy plains east of the Andes are found large numbers of animals. Monkeys are numerous. There are parrots, toucans and many other birds, as well as bright-colored insects without number. Alligators are common in the rivers.

The Indians in this region hunt the tapir for its skin and meat.

This animal lives chiefly in the forests, as it feeds on buds, leaves and tender shoots of plants.

Great serpents, called *boas*, are sometimes seen crushing ant-eaters and other animals.

The boa has no poison fangs, but it coils its long body round the animals and slowly crushes them to death.

The ant-eater has sharp claws with which it tears open ant-hills. Then it thrusts in a long sticky tongue and gathers up the little insects for food.

A large catlike animal, called the *jaguar*, is found in nearly all parts of South America, as it can feed on small animals. In the far south is seen the large running bird that looks like an ostrich. It is known as the *rhea*.

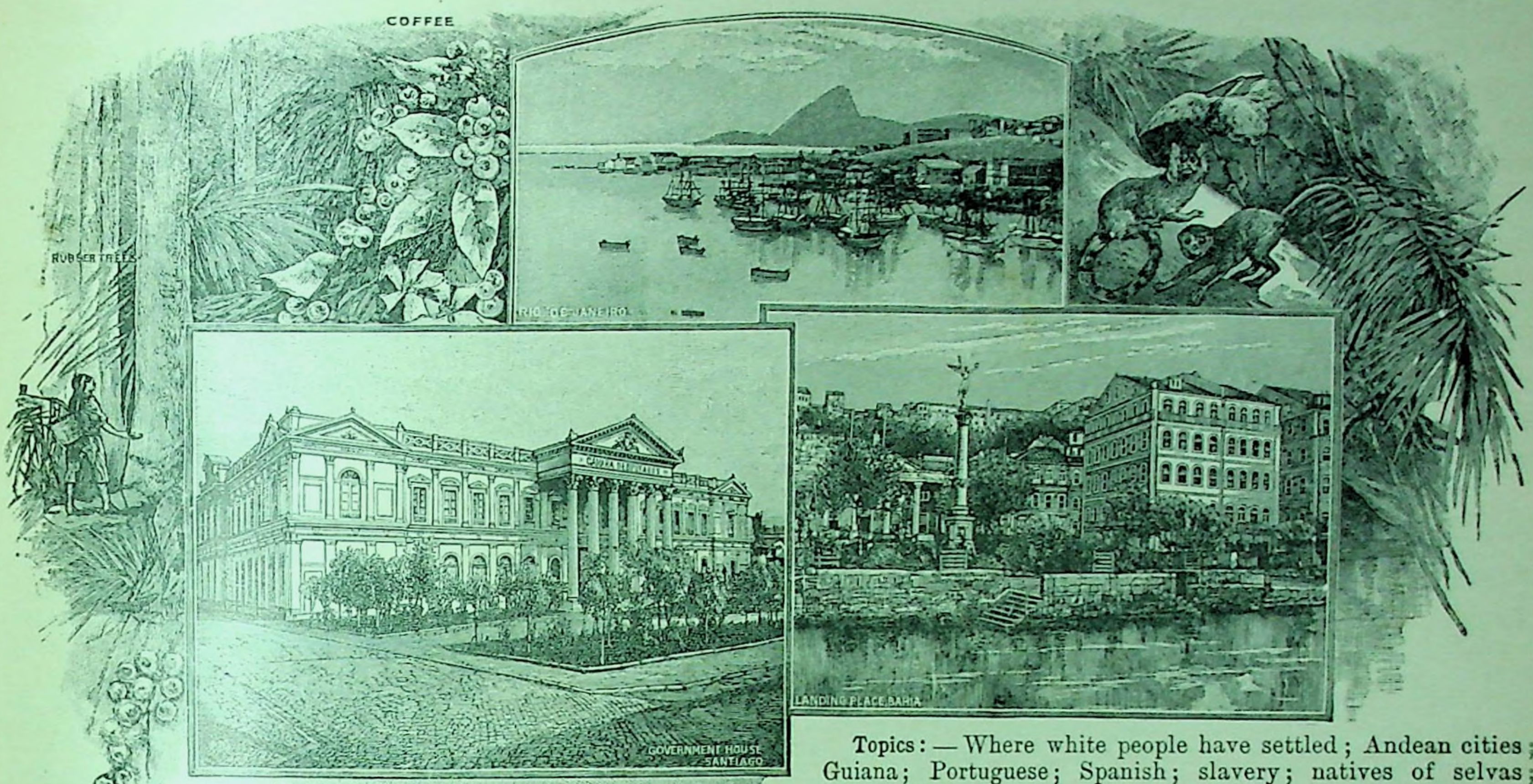
Cattle and sheep in great numbers graze on the open plains of this continent. These animals are not native there, but were brought by white settlers from Europe.

Topics:—Tell what you can of llama; alpaca; condor; animals of forests and open plains east of Andes; tapir; boa; ant-eater; jaguar; rhea; cattle and sheep in South America.

94. People

The white people form the leading class in all the countries of South America. As a rule, they have settled within a few hundred miles of the coast and there built most of their cities and towns. Many of the cities of the western countries are located in valleys in the Andes, far above the hot and sickly lowlands along the coast.

The names British, French and Dutch, given to the three parts of Guiana, indicate what nations of Europe



are developing this section. The great country of Brazil was settled by Portuguese, or people from Portugal, and their language is still spoken there. Spanish people have, to a large extent, settled the other countries of South America.

Slavery was at one time common in nearly all parts of South America, and millions of Negroes were taken from their homes in Africa to this continent. They were used by the white people as laborers. Now they are free, and they have made their homes near the places where they toiled. They form a large part of the population in nearly all countries of South America. *See map on page 35.*

Indians of various tribes are widespread over this continent. Many live in the same districts as the white men and the Negroes, but far the greater number are found in the selvas.

When the white men from Spain first went into the highland of Peru and Bolivia they found there a race of Indians whose rulers were called *Incas*, and the same name was given to all the people ruled by the Incas. These Indians had built cities of smoothed stone, and they had made excellent roads and bridges in the mountains. Cuzco was their chief city, and it still contains ruins of their beautiful stonework.

The white men were very cruel to the Indians and made slaves of them. The descendants of the Incas still live in this highland. Some work in the silver mines; others gather large quantities of Peruvian bark and cacao for market.

Except the three Guianas, all countries of South America are republics, with governments similar in many respects to the government of the United States.

Topics: — Where white people have settled; Andean cities; Guiana; Portuguese; Spanish; slavery; natives of selvas; Incas; Cuzco.

95. Countries and Cities

BRAZIL. **Rio de Janeiro**, the capital of this republic, is on a deep and spacious harbor. This port is near the richest coffee district of Brazil and is one of the largest coffee markets in the world. The largest coffee market is **São Paulo** (St. Paul), which ships through **Santos**, a seaport southwest of Rio de Janeiro.

Other exports from Rio de Janeiro are sugar, hides, tobacco and diamonds. The principal imports into Brazil are cotton cloth and machinery.

Bahia, a large port northeastward from Rio de Janeiro, resembles the latter in its foreign trade.

Pernambuco is the leading sugar port of Brazil. The harbor is partly inclosed by long rocky reefs, as shown in the picture.

Para is on one of the mouths of the Amazon. This city has a large rubber trade.

Rocky reef forming harbor of Pernambuco

Other exports from the Amazon basin, mostly through Para, are cocoa, Brazil nuts, hides and Peruvian bark.

ARGENTINA. The people of this republic are engaged chiefly in raising cattle, horses, sheep, wheat and corn.

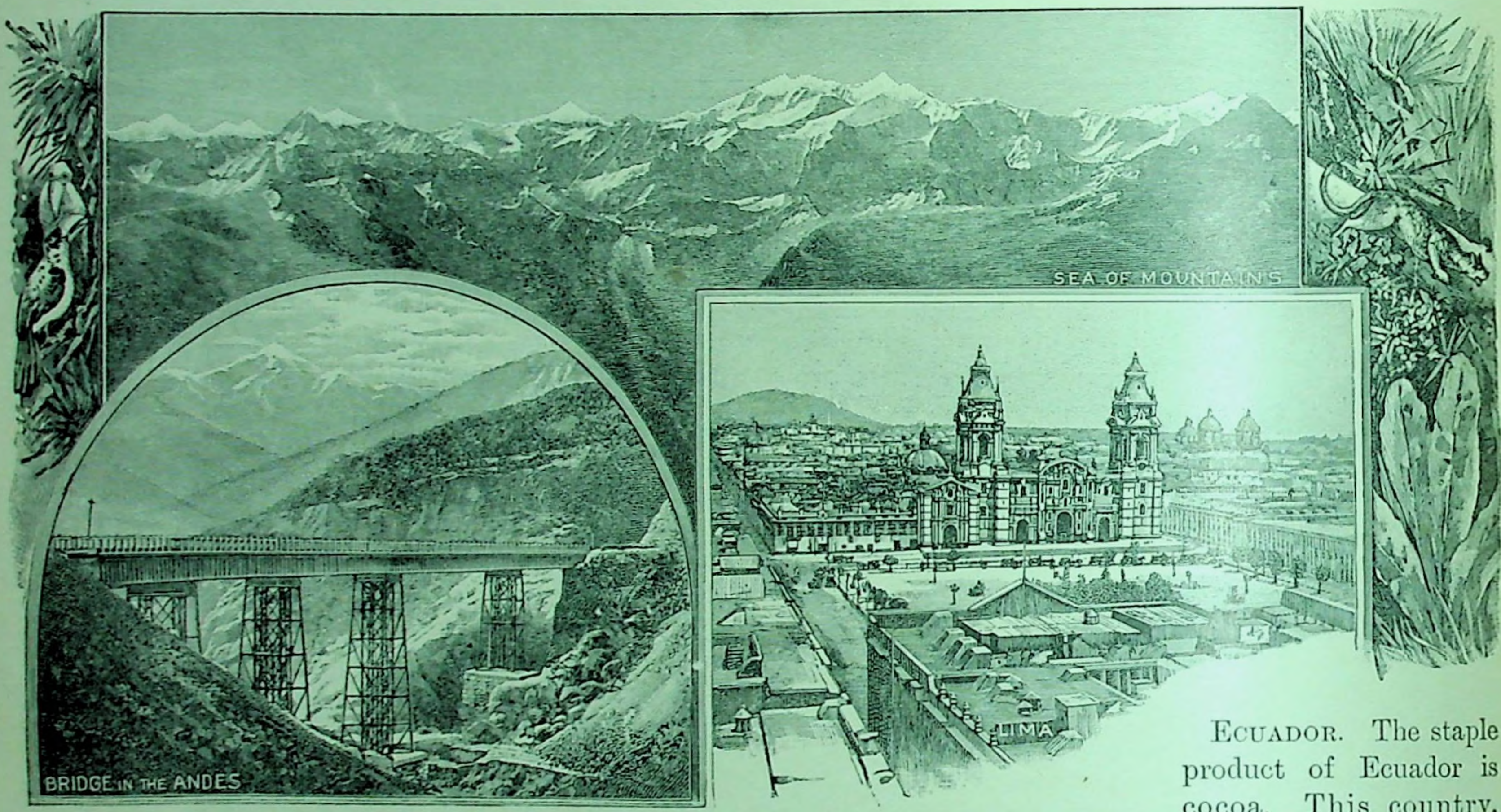
Buenos Aires is the capital. It is one of the principal ports of the continent and has a large foreign trade in hides, wool and wheat. The leading imports are cloth and railway materials.

Cordoba and **La Plata** are important trade centers. The former has a university and an academy of sciences.

Uruguay. A large part of this country is grazing land for cattle and sheep. Wool and hides are the principal exports.

Montevideo is the capital and the largest port.

Paraguay. In this small republic the most valuable product is Paraguay tea, or *yerba mate*. **Asuncion**, the capital, is the commercial center.



Chile. This republic has great mineral wealth. In the desert district of Atacama are found great quantities of niter, a whitish salt used in making fertilizer and gunpowder. Copper and silver are abundant in the northern half of Chile. Rich mines of coal are being worked in the southern half of this country. The principal farming products of Chile are wheat and wine grapes.

Valparaiso is the chief port. Most of the imports — such as cloth, cattle and sugar — are received into this city. Large quantities of niter and copper are shipped from the northern seaport of **Iquique**.

Santiago is the capital and largest city of Chile. This is one of the Andean cities which are built far above the unhealthful coastal region. Santiago is in a wide valley on the western slope of the Andes, more than one third of a mile above sea level.

Bolivia. This republic has rich mines of tin and silver. Its rubber product is of the finest quality.

Bolivia has no seaport, but many of its products are exported through Buenos Aires, Arica (Chile) and other ports.

La Paz and **Sucre** are the principal cities. The latter is the capital. **Potosi** is noted for its silver mines.

Peru. Sugar cane and cotton are raised in the flood plains of the small rivers of western Peru. Sheep and alpacas are reared in the highlands. Sugar, cotton and wool are the leading exports. Cloth is the most valuable article of import. Copper, silver and petroleum are produced.

Lima is the capital and largest city of this country. **Callao** is one of the principal seaports of western South America.

Ecuador. The staple product of Ecuador is cocoa. This country, like all the others crossed by the Andes, has rich mineral deposits.

Quito is the capital. **Guayaquil** is its largest seaport.

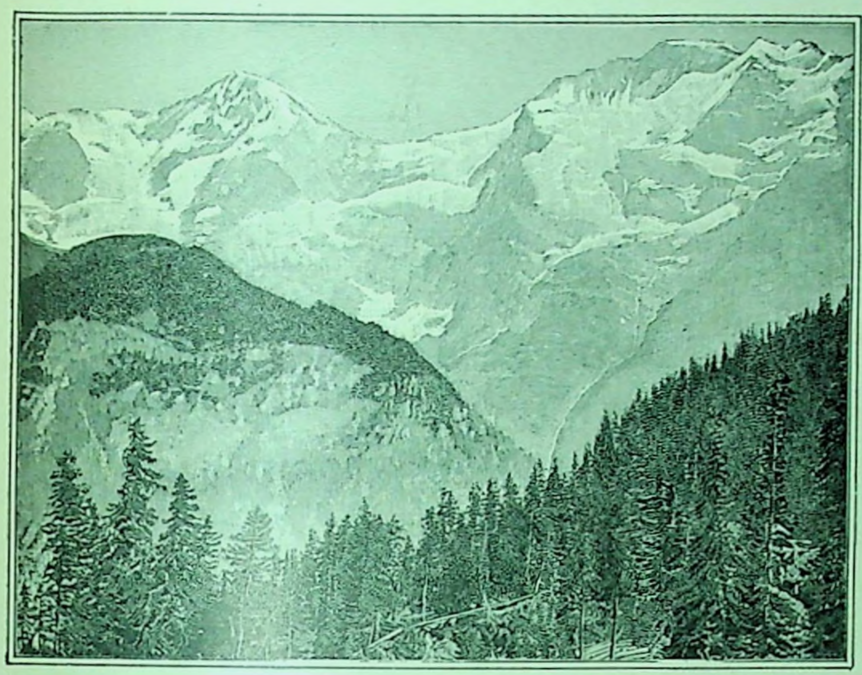
Colombia. The leading export of this country is coffee. **Bogota**, the capital, is over a mile and a half above sea level. Colombia is rich in minerals. Most of the world's supply of emeralds comes from its mines. In the year 1903 its best department seceded and became the republic of Panama. *See page 137.*

Venezuela. Coffee is the most valuable export from Venezuela. Many hides are shipped from the Orinoco basin. **Caracas** and **Valencia** are the most important cities of this country.

Guiana. The three colonies of Guiana are not thickly settled, and the value of their trade is not very great. Sugar is the leading export. **Georgetown**, **Paramaribo** and **Cayenne**, the capitals of the colonies, are the most important centers of trade.

96. Highlands of Europe

Europe may be divided into three regions, — highlands in the southwest and south, lower highlands in the northwest, and lowlands spreading over the rest of the continent, as far as the Ural range.



Scene in the Alps (Jungfrau)

Review lesson 15 and tell what you can about the surface of Europe.

The Alps form the mountain center of southwest Europe; they are about as high as the Rocky mountains of Colorado.

Among the Alps are great snow-capped mountains down whose sides long glaciers slowly wind, melting in the valleys. Mt. Blanc, the loftiest of these peaks, is about three miles high. Snow and ice bury the upper half of this great peak and the many other peaks around it.

The Alps are pierced by several railroad tunnels. The St. Gotthard tunnel is nearly ten miles long, — the longest in the world. It connects the plateau of Switzerland with the basin of the Po river. Mt. Cenis tunnel is near the western end of the Po basin.

Along the southern border of the Alps are many lakes that are world-famed for their beauty. Among these are lakes Como, Garda and Maggiore.

There are many famous passes over the Alps. Since the building of railroads, these lofty passes have been little used by travelers.

The Alps are famous for their scenery. They abound in lakes, waterfalls and glaciers.

The western part of the Alps bends southward between the valleys of the Po and the Rhone.

Monaco, the smallest state in Europe, with an area of only eight square miles, is near the southeast corner of France, where these mountains reach the sea. The city of Monaco, in the state of the same name, occupies a rocky headland, as shown in the picture.

On the western side of the Rhone valley in France rises the broad range known as the Cevennes. The Jura mountains extend from the valley of the Rhone into that of the Rhine. This range consists chiefly of low folds, like many of the Allegheny ridges.

The Rhone is so rapid that only strong steamers can stem its current above its delta plain. This river rises in the Alps and flows through the beautiful lake Geneva.

The river Rhine flows from lake Constance. This stream and also some of its branches have worn deep valleys in a broad rolling upland reaching almost to its great delta plain. The Rhine is navigable to the border of the Swiss plateau.

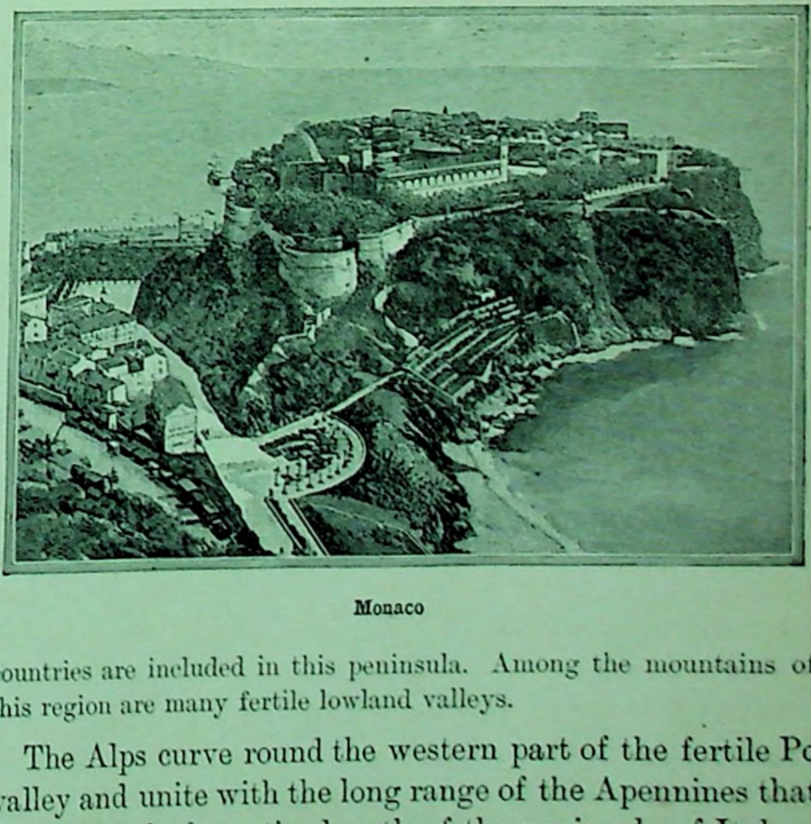
The Carpathian mountains partly separate the highlands of southern Europe from the great plains of eastern Europe. The lowland part of the Danube basin lying southwest of these mountains is known as the *plain of Hungary*.

This plain was formerly the bed of a great lake. It is now one of the most fertile parts of Europe and supports nearly one fourth as many people as there are in the United States. The Danube and its branches form a waterway to almost every part of the plain. The main river affords an outlet eastward to the Black sea. At the place where the Danube leaves the plain of Hungary the river has cut a long gorge across the range. This gorge is known as the *Iron Gate*.

In the gorge the river flows swiftly over a rocky bed, forming rapids. A canal has been built at great expense, to carry vessels past the rapids. This river has built a great delta.

South of the lower part of the Danube rises the lofty Balkan range of mountains. This is the highest range in the peninsula between the Black and the Adriatic seas.

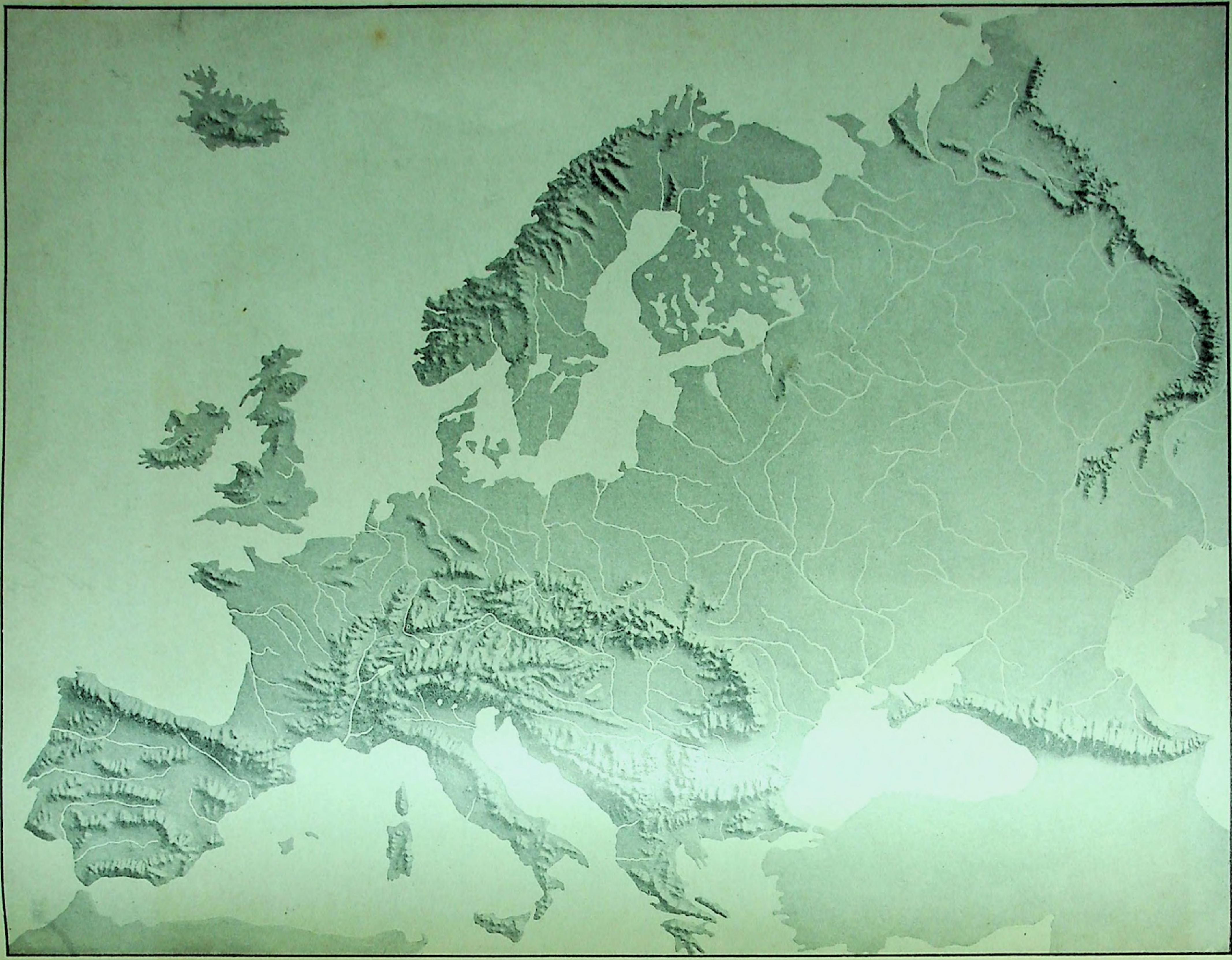
The name *Balkan peninsula* is often applied to the part of Europe that extends southward between the Black and Adriatic seas. Several countries are included in this peninsula. Among the mountains of this region are many fertile lowland valleys.



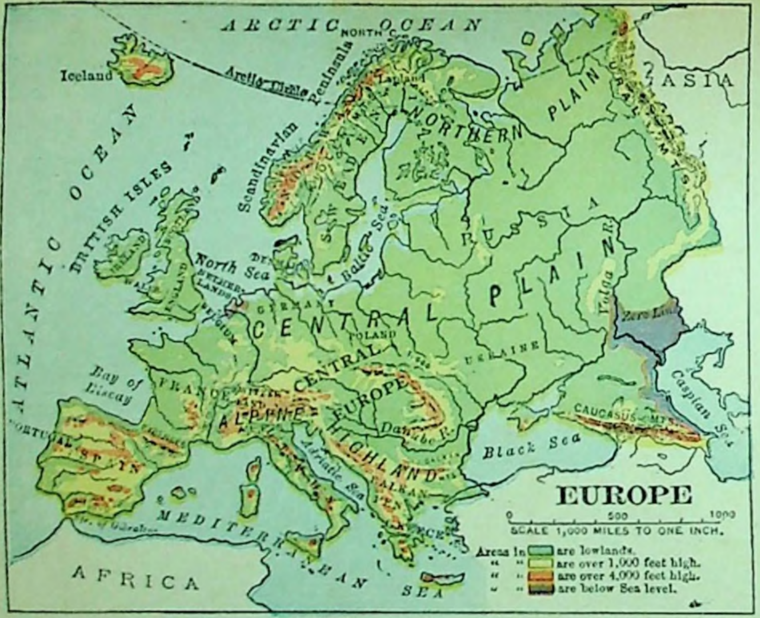
Monaco

The Alps curve round the western part of the fertile Po valley and unite with the long range of the Apennines that runs through the entire length of the peninsula of Italy.

On the northeast slope of the Apennines, not far from the source of the Tiber, lies the small free state of San Marino. It covers only 32 square miles and has a population of about 10,000.



RELIEF MAP OF EUROPE



The Apennines have no such lofty peaks as the Alps. There are many volcanoes in southern Italy and the neighboring islands, but there is only one *active* volcano on the *mainland* of Europe. This is *Vesuvius*, near the beautiful bay of Naples, on the southwest coast of Italy.

Long ages ago an eruption of Vesuvius[1] buried three cities. When the eruption ceased the layers of mud, ashes and lava were so deep that no trace of the houses could be found. Centuries passed, and people no longer knew where the cities were buried; but beneath new vineyards and groves lay many works of art and the ruins of temples, homes, baths and paved streets. Some of these, especially in Pompeii, have now been dug up, and they teach us a great deal about the customs of the Roman people who lived there in that early time.

Vesuvius

After this terrible eruption Vesuvius was quiet for fifteen hundred years; then it again became active and killed thousands of people. The peak burst forth again in 1906. Several towns were destroyed and hundreds of people killed.

Mt. Etna, on the island of Sicily, is the loftiest volcano in Europe, yet it is only a little more than half as high as Chimborazo.

Among the mountains of southwest Europe the Pyrenees rank next in height to the Alps, and form a lofty barrier between France and Spain. Railroad lines have been built round the end of the Pyrenees range.

Far in among these mountains is the little state of Andorra. It occupies a few small but elevated valleys. There are only a few thousand people in the entire state, and most of them are shepherds. In name, Andorra is a free state, but it pays tribute both to France and to a Spanish bishop.

A few hundred thousand industrious people known as *Basques* live near the bay of Biscay in northern Spain and southern France. They are probably the descendants of early tribes of white people that once held the Spanish peninsula.

The Spanish peninsula is mostly a broad plateau with a border of narrow coastal plains on the east and on the west. Mountain ranges almost inclose the upland region, and other ranges extend across it.

Excavations in Pompeii

This broad upland is swept by chilly winter winds and is parched by summer sunshine.

(*Continued on page 148.*)

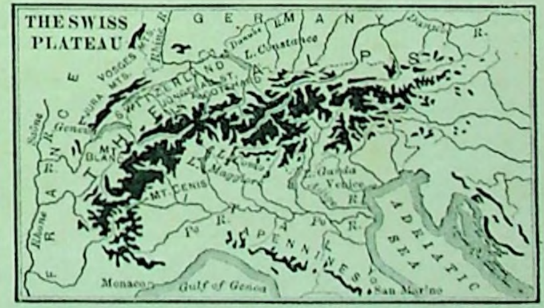
Map Studies: — Study the relief map and describe as well as you can the surface of Europe.

Which is the larger, North America or Europe? *See maps on pages 17 and 20.* What oceans lie between these continents? Draw the general shape of Europe,[2] using three or four straight lines. Sketch the north coast; the west coast; the south coast; the river and mountain border on the east. Which has the more regular coast line, North America or Europe?

What seas and mountains bound Europe on the south? What mountains, river and sea bound it on the east? Name two large seas between Europe and Asia; one large sea between Europe and Africa. Name a bay north of Spain. What sea partly separates the British Isles from the mainland of Europe?

What large peninsula is between the Baltic sea and the Atlantic ocean? Where is the White sea?

What does lesson 15 tell about the Alpine highland? The Alps? The great plain in Europe? The Arctic shores of this continent? In what part of Europe are the highest mountains? Locate the following ranges: Pyrenees; Apennines; Balkan; Carpathian; Caucasus; Ural; Kiolen. In what part of Europe is the lofty group of mountains known as the Alps?



Which part of Europe is a great plain? Where are the Valdai hills? Name four seas that receive rivers from the regions of the Valdai hills.

Where does the Danube river rise and into what sea does it flow? Name a river that rises in the Alps and flows to the North sea; another to the Adriatic sea; another to the Mediterranean sea.

Locate the strait of Dover; the strait of Gibraltar; the strait of Bosporus; the strait of Dardanelles.

In which zones is Europe? Which part of this continent is in the warm belt? *See lesson 20.* Which part is in the cool belt? Name some of the principal plants of the north temperate zone.

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[1] The eruption took place in A.D. 79. The cities of Pompeii, Herculaneum and Stabiæ were buried.

[2] See guide map of Europe in the supplement.

Only the spring and autumn months are mild and agreeable. The rainfall is so light that the plateaus are almost treeless.

In what direction do the principal mountain ranges in the Spanish peninsula extend? Locate the Sierra Nevada. Large quantities of copper, lead and zinc are found in the mountains of this peninsula.

Long ago Spain was conquered by people called *Moors*, from northern Africa, and some of the buildings made by them may still be seen. Grandest of all is the *Alhambra*, the palace and fortress of the Moorish kings. It is in the city of Granada, near the Sierra Nevada. This was the last stronghold of the Moors in Spain and was captured the year that Columbus first set sail for the New World.

The west and southwest coasts of Spain receive heavy rainfalls; the slopes of the east are dry, but the Moors constructed immense reservoirs in the uplands, and even to-day the water is led from these reservoirs to irrigate the eastern lowlands.

On the southern coast of Spain, near the strait of Gibraltar, a small but famous peninsula extends into the sea. The body of the peninsula consists of a mass of rock, known as the *rock of Gibraltar*. It is a fortress held by the British nation.

The river valleys in this peninsula, as well as the narrow coastal plain, are small but very fertile.

The Scandinavian peninsula, containing the two countries Norway and Sweden, is more than a thousand miles long. The highland of this peninsula consists mainly of a rugged plateau deeply cut by river valleys. Along most parts of the Atlantic coast the plateau rises abruptly from the sea; but toward the east it descends in gentler slopes, across which flow many rivers to the gulf of Bothnia and the Baltic sea.

(*Continued on page 150.*)

Map Studies[1]: — What countries of Europe border on the Arctic ocean? What country occupies the greater part of the lowlands of Europe? Name two countries forming the great peninsula in the northwest part of this continent.

What countries border on the Baltic sea? In what country is the mouth of the Rhine? Name another small country on the south shore of the North sea. Where are the British Isles? What two countries border on the bay of Biscay?

What countries form a great peninsula in the extreme southwest of Europe? Name the countries that form peninsulas in the Mediterranean sea.

What small country in the region of the Alps has no seacoast? What countries extend from the Black sea to the Ægean sea?

Locate Iceland; Sicily; Corsica and Sardinia; the Balearic islands; Crete; the Ægean sea; the sea of Azov and peninsula of Crimea; the sea of Marmora; lake Ladoga; the gulf of Finland.

What does lesson 28 tell about the people of Europe? Lesson 29 about the religions? Lesson 30 about the governments?

Germany: — What countries border on Germany? On Italy? On Poland? What seas touch these three countries? What does the relief map of Europe show about the surface of Germany? Name three rivers that flow across this country. What part of Germany is in the Danube basin?

France: — Name a sea, bay and channel that partly surround France. Name a river of France flowing into each of these bodies of water. What does the relief map of Europe show about the surface of France?

What two countries are in part separated by the Pyrenees? What mountains are between France and Italy? What range partly separates France from Switzerland? *See map on page 157.*

Belgium: — What country is south of Belgium? What country is on the east?

The Netherlands: — Through what countries does the Rhine river flow? What country lies east of the Netherlands? What sea is on the north and west?

Denmark: — What seas are on the east and west of Denmark? What country adjoins it on the south?

Spain and Portugal: — Name the large bodies of water that partly surround the peninsula of Spain and Portugal. At what strait does this peninsula approach nearest to Africa? What group of islands in the Mediterranean sea belongs to Spain? *See colors on the map.*

What does the relief map of Europe show about the surface of Spain and Portugal? In what general direction do most of the rivers flow? Along what coast is the range known as the Sierra Nevada? Along what coast are the Cantabrian mountains?

Italy: — What mountains are on the north and northwest border of Italy? What range extends along the peninsula? What river valley occupies a large part of northern Italy? What river flows through the city of Rome? What city is near Mt. Vesuvius?

Name two large islands in the Mediterranean belonging to Italy. *See color on the map.* On which of these islands is Mt. Etna?

Balkan Peninsula: — Name the seas that border on this peninsula. Which of these seas border on Greece? Name a mountain range that extends through the peninsula. What does the relief map of Europe show about the surface of these countries? What strait forms the outlet of the sea of Marmora?

Switzerland: — What does the relief map of Europe show about the surface of Switzerland? Name all the countries that bound Switzerland. Across which of these countries does the Danube river flow?

Between what two countries does lake Geneva lie? What river flows from lake Geneva? What three countries border on lake Constance? What river flows from lake Constance?

Upper Danube Region: — In what country does the Danube river rise? The source of what other river is not far away? In what directions do these rivers flow? What capital cities do you find on the Danube river? Where is the Carpathian range?

Lower Danube Region: — Between what countries does the lower half of the Danube river flow? Which of these countries contains most of the delta of the Danube? Which of them border on the Black sea? In what countries are the Balkan mountains?

Russia: — What does the relief map of Europe show about the surface of Russia? Name the large bodies of water that form part of the boundaries of this country. Between what two seas do the Caucasus mountains extend? Where are the Ural mountains?

Name the countries that adjoin Russia on the west and southwest; on the northwest.

What river forms the outlet of lake Ladoga? Describe the course of the Volga river; of the Dvina river; of the Ural river; of the Don and Dnieper rivers. Which of these rivers flows in the coldest region?

Norway and Sweden: — What part of the coast of North America lies due west of Norway?

What does the relief map of Europe show about the surface of Norway and Sweden? Into what sea and gulf do most of the rivers of Sweden flow? Where is lake Wenner?

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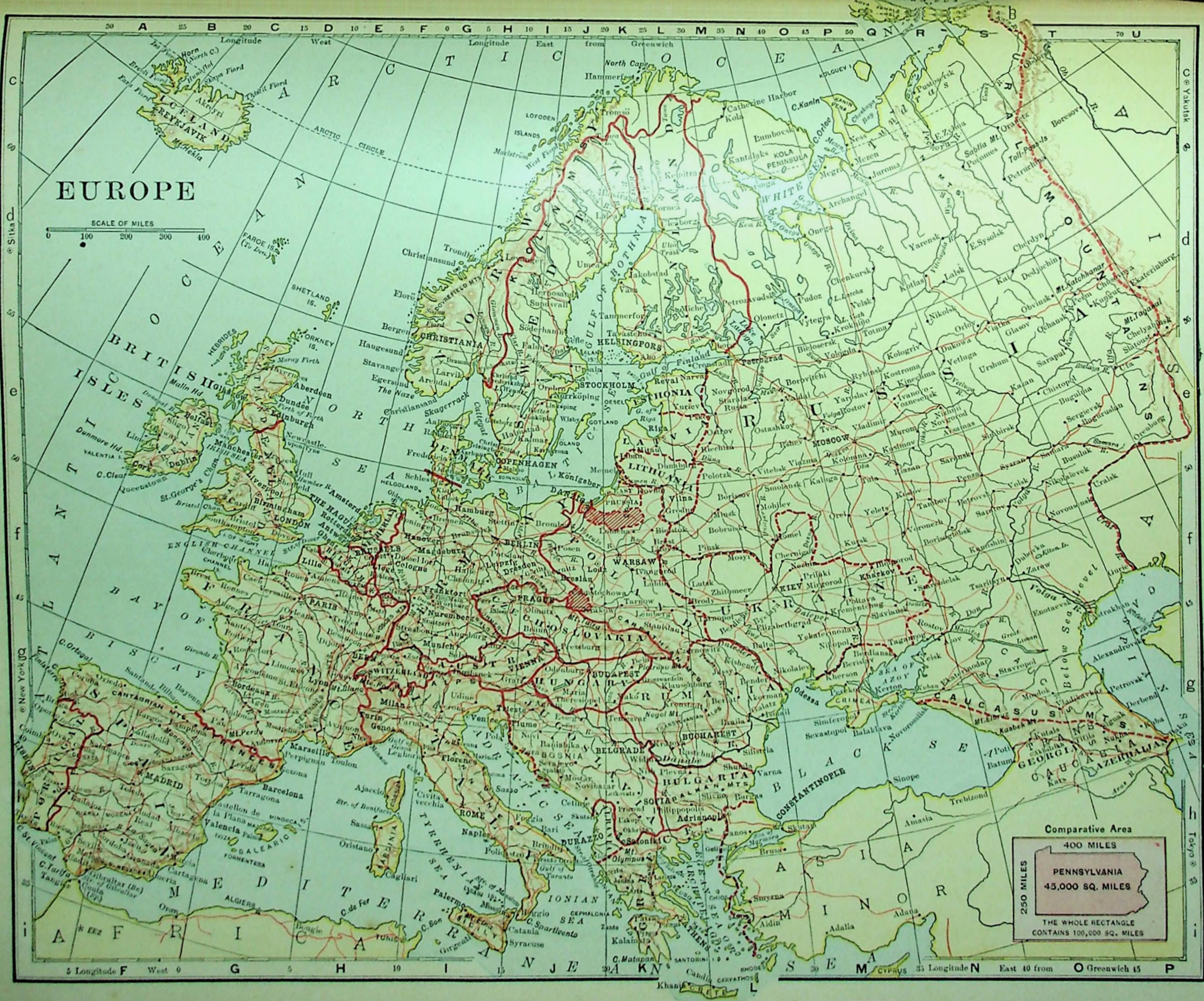
[1] To Teachers: — These map studies are so arranged that pupils may either study, at one time, all the questions relating to a continent, or, perhaps better still, may study the questions relating to each country in connection with the text treating of such country. Use maps on pages 149 and 157.

EUROPE



Settled boundaries

Unsettled boundaries

▨ Sovereignty to be determined by popular vote

▨ Areas under control of League of Nations

The west coast of Norway is one of many coasts formed by rugged land settling partly beneath the sea, thus letting the waters flow into deep valleys, making almost countless bays and peninsulas. These deep and long bays in Norway are called *fiords*. The Sogne fiord is the longest and reaches more than a hundred miles inland. A large part of the plateau is buried in ice and snow; streams leap down the cliffs into the valleys, and many glaciers also creep slowly towards the sea.

Along the west coast of this great peninsula extends a series of banks over which the sea is shallow. Beyond them the water is very deep. These banks abound in fish.

This peninsula has mines that yield iron of a very high grade.

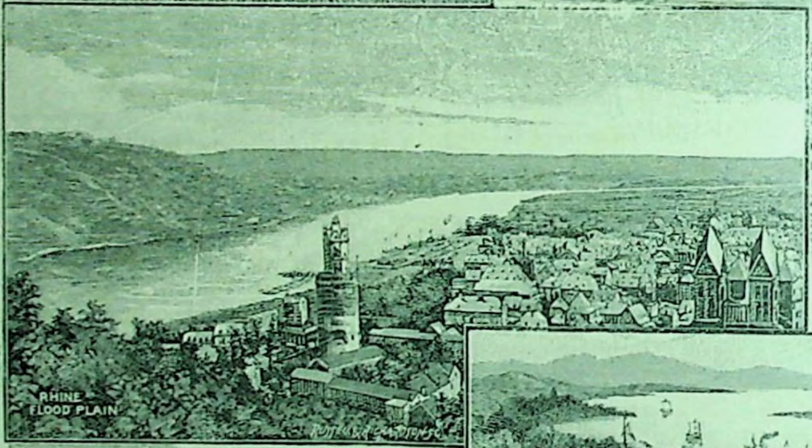
The northern part of Norway is so far from the equator that for two months in summer the sun does not sink below the horizon seen from the North cape.

The great range of the Caucasus mountains rises along the southeast border of the plain of Russia and extends from the Black sea to the Caspian.

SCENE IN HOLLAND

LANDES FRANCE

SCENE IN RUSSIA


RHINE FLOOD PLAIN

VOLGA RIVER

Mt. Elbruz, in the Caucasus range, is the highest mountain in Europe, but its summit is nearly 2000 feet lower than that of Mt. McKinley.

One of the richest petroleum fields in the world is in the region of the Caucasus mountains. The oil abounds in both the east and west ends of the range. In recent years much attention has been given to the boring of wells and to the refining and shipping of oil, especially in the vicinity of Baku, a port of the Caspian sea. This region now rivals the oil fields in the northern part of the Allegheny plateau.

The low range of Ural mountains separates in part the plain of Russia in Europe from the great plain of Siberia. These mountains are rich in gold and other minerals.

Topics: — Three divisions of surface of Europe; Alps; Mt. Blanc; tunnels; western Alps; Monaco; Rhone valley; Cevennes and Jura; Rhone and Rhine rivers; Carpathian range; Danube river and plain of Hungary; Iron Gate; Balkan mountains; Balkan or Turkish peninsula; Apennines; San Marino; Vesuvius; Mt. Etna; Pyrenees; Andorra; Basques; surface of Spanish peninsula; Moors and Alhambra; irrigation; Rock of Gibraltar; surface of Norway and Sweden; coast of Norway; iron; Caucasus mountains; Mt. Elbruz; Baku; Ural mountains.

97. Lowlands of Europe

The lowlands of Europe may be said to begin near the Pyrenees mountains and to curve northeastward round the Alpine highland, through France, Germany and the small countries along the southeast shore of the North sea, thence spreading over the great country of Russia to the Arctic shore on the north and to the Black and Caspian seas on the south.

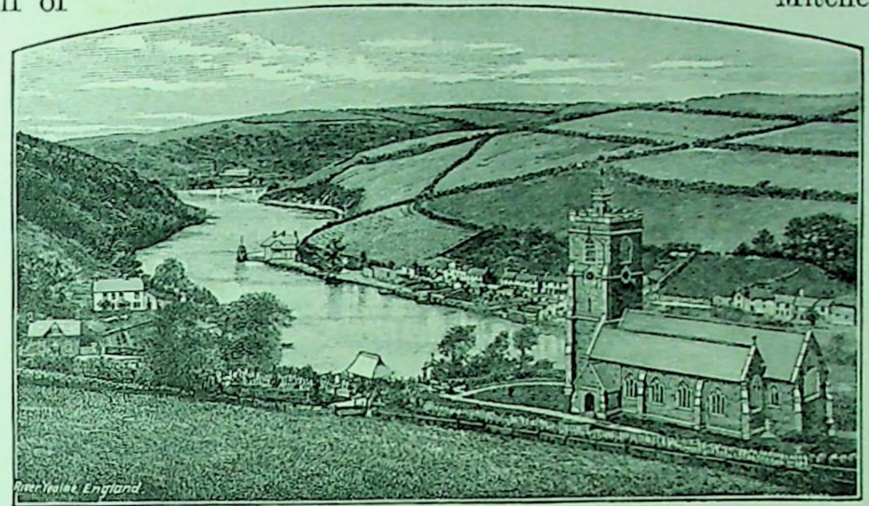
The rivers shown on the map are the best guide to the slope of the land. What is the general slope of this plain in France? In Germany? In southern Russia? In northern Russia?

In what country are the Seine and the Loire rivers? Into what bodies of water do they flow? Describe the course of the Rhine; of the Elbe; of the Oder and Vistula. In what hills does the Volga river rise? Describe its course. This is one of the rivers that have built great deltas. Describe the course of the Dvina. What large seas receive rivers that rise in or near the Valdai hills?

France and Germany extend from the Alpine highland as broad rolling uplands, in which many of the rivers have cut deep valleys. Towards the coast in these countries, as well as in the small countries along the southeast shore of the North sea, the plain is lower and more level. These lower parts are mostly coastal plains, though the region round the mouth of the Rhine is an immense delta plain formed by that river.

Large quantities of coal and iron are found in the southern part of Germany, in Belgium and in France. Great manufacturing cities have grown up in the vicinity of these mines, and among their products are machines, tools, hardware and cutlery. These three countries are noted for their iron manufactures. Germany also yields large quantities of copper, lead and zinc.

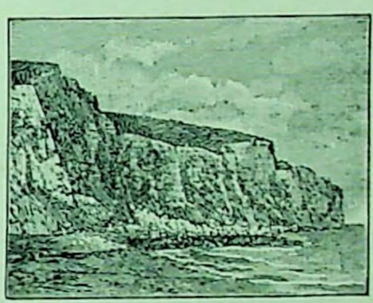
The great plain of Russia includes nearly half of the continent of Europe. The northern portion of this plain consists of frozen treeless tundras like those along the Arctic coast of America. South of the tundras are the wooded plains which also stretch far eastward across Siberia. The southern half of the plain of Russia is mostly prairie land. Round the salt Caspian sea spread salty lands called *steppes,* large areas of which are below sea level.



Typical English landscape

The Volga river, with its network of canals, forms the main waterway through the Russian plain. These water routes lead to all the border seas. The canals cross from river to river, so that boats can carry freight to almost every city and large town in Russia.

On the west the inland waterways of Russia connect with the Vistula system. Boats from the Vistula can pass through tributaries and canals that lead into the Oder, thence to the Elbe and the Rhine. The rivers of Germany and Poland thus help to form a connected system, reaching nearly all ports of the country and affording a cheap means of transporting freight.



Chalk cliffs, Dover, England[2]

The low countries of Belgium and the Netherlands, or Holland, are crossed by many canals. From the Rhine valley canals lead to the Seine, thence to the Loire and to the Garonne. From the latter river boats can follow the canal route to the Rhone river or to the Mediterranean sea. The Rhine and the Danube are also connected by a canal in the highland region, thus completing the water route from the North sea to the Black sea, by way of the plain of Hungary. All these canals are of great service.

Eastern Sweden may properly be classed as a part of the lowland region of Europe.

Topics: — Regions included in lowlands of Europe; general slopes of this lowland; plain in Germany and France; Rhine delta; mineral products of Germany, France and Belgium; manufactures; four regions of lowland of Russia; Volga river; canal system of Europe; eastern Sweden.

98. Principal Islands[1]

Two large islands and many smaller ones form the group known as the British Isles. The largest of these is Great Britain. This is the most important island in the world, yet it is only one fortieth as large as the United States. Ireland is second in size among the British Isles.

The island of Great Britain is in three divisions. What range of hills separates Scotland from England? Where is Wales?

Most of the high land in Great Britain is in the north and west parts. The south and east parts of the island are mostly low or slightly hilly land.

The northern portion of Scotland is very rugged, but it contains no lofty chain like the Alps. It consists largely of rounded peaks and flat-topped uplands deeply cut by streams. Ben-Nevis is the highest point of land in the British Isles, but it is not quite two thirds as high as Mt. Mitchell. The southern part of Scotland consists of rolling or hilly lowlands.

The mountains in England and Wales are little more than high hills. Southward from the Cheviot hills the highland merges into the lowland.

One of the richest coal and iron regions of the world extends from southern Scotland across northern England to Wales. Great Britain ranks next to the United States in coal and iron production. Among the products of the iron and steel works of Great Britain are machines, tools, hardware and cutlery.

The groups of low mountains or hills in Ireland are mostly near the coast. The inland district is a plain.

Large areas of plain in Ireland are low and boggy. They are so level that they cannot even be drained and are therefore of little value for farming or grazing. Thick layers of decaying moss cover the bogs and supply a kind of fuel known as *peat* or *black turf.*

Ireland is often called the *Emerald Isle,* because the grass there is green all the year. Parts of the inland district form fine grazing lands, and the country is noted for its dairy products.

The soil in many parts of Ireland is suited to the growth of flax. Flax ranks next in value to cotton, for cloth making. The flax grown in Ireland is made into the fine linen for which the city of Belfast has long been noted.

Giant's Causeway, Ireland

Topics: — Islands forming British Isles; divisions of Great Britain; highlands and lowlands; surface of Scotland; surface of England and Wales; iron and coal; surface of Ireland; peat.

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[1] See page 155 for map studies of the British Isles.

[2] The *cliffs of Dover* face the strait of Dover. The high shore is made of chalk and in clear weather can be seen from the coast of France. *Giant's Causeway* is on the north coast of Ireland. The rocky columns shown in this picture are made of lava; cooling sheets of lava often crack into countless columns like these.

99. Climate

In which zone is nearly the whole of Europe? *See map on page 28.* Which part is in the warm belt? In the cool belt? In the cold belt? Refer to the maps on page 31 and tell from what direction most of the winds blow over Europe. Which side of the continent must receive the most rainfall? What does lesson 23 say about the effect of the Gulf stream and the climate of Europe?

Western Europe is in the path of winds from over the Atlantic. These winds give plentiful rainfall to most parts of the western half of Europe, but farther inland the rains become less, and the eastern half of the plain of Russia often suffers from long drouths. The region around the Caspian sea has only light rainfall.

Southern Europe has a climate similar to that of the Southern states of our own country; middle Europe, like that of the prairies south of the Great Lakes; northern Europe, like that of the region stretching northward from the Great Lakes to the Arctic ocean.

Venetian gondolier

The rainfall from the westerly winds is very heavy on the highlands of the British Isles and the Scandinavian peninsula. Although the northern part of this peninsula lies within the Arctic circle, its western slope has a mild climate, largely due to the winds blowing shoreward from over the waters that drift far northward from the Gulf stream. This stream also gives a mild climate to the British Isles.

In winter the sea and gulf on the east of the peninsula, as well as the wide straits leading into them, are frozen over, for here the mild winds from the ocean do not enter.

Topics: — Belts of heat crossing Europe; winds and rains; climate of Europe compared with that of North America; climate of British Isles and Scandinavian peninsula.

Italian piper

100. Plant Life[1]

Wheat, rye and other grains are widespread over the lowlands of Europe, as well as in the river valleys of all the Mediterranean countries. The grain region includes the river valleys of the Spanish peninsula, the Po and Danube valleys and the great plain spreading through France, Germany and Russia.

Spanish milkman

The countries of southern Europe, from Spain to the plain around the Black sea, produce quantities of grapes. Most of these are used in making wine. Many are also dried and sold as raisins. The valley of the Rhine in Germany, the plains of southern France, the plain of Hungary and the sunny slope of Spain and Italy are famous for their vineyards. The small raisins of Greece are called *currants*,— a corruption of the word *Corinth*. Currants are the most valuable product which Greece sends to other countries.

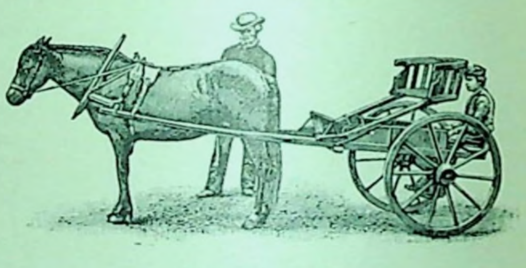
Millions of tons of sugar beets are raised each year in the plains spreading round the Alpine highlands, especially in the plains of Hungary, Russia and bordering countries, Germany, France and the delta of the Rhine.

The Mediterranean countries are famous for their oranges, lemons, olives and other fruits.

Large quantities of tobacco are raised in the Balkan peninsula, the plain of Hungary and in many parts of the great plain of Europe. Flax from which linen cloth and many fine laces are made is raised in Ireland and in the plain spreading round the Alpine highlands, especially in France, Belgium, Holland and Germany.

Forests of pine and other soft-wood trees extend in a wide belt from Norway eastward across Sweden, northern Russia and the plain of Siberia, merging on the north into the frozen tundras along the Arctic coast.

Dense forests both of hard-wood and soft-wood trees grow on the sides of most of the mountains of southern Europe, except, of course, on the high and cold Alpine summits. There are also large forests in the rougher portions of the plains near the highlands.


Norwegian cart

The great plain of Europe and many valleys in and round the highlands produce abundant grass for millions of cattle, horses and sheep. The best grass lands are in Russia and Ukraine, the plain of Hungary in the middle Danube basin, the valley of the Po, the valleys of the Alpine highland and the plains on the north and west of the Alps.

The grassy plains of Russia and bordering countries support millions of geese. Most of them are shipped to German markets.

The mulberry tree thrives in the countries of southern Europe. The leaves of the mulberry are fed to silkworms. The spinning and weaving of silk form a leading industry in France, Italy and Spain.

Topics: — Grain regions of Europe; vineyard districts; raisins and currants; sugar beets; Mediterranean fruits; tobacco; flax; forests; grass lands.

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[1] The wild animals of Europe are like those of northern Asia. *See lesson 113.*

101. People

What do lessons 27 and 28 tell about the people of Europe? What does lesson 30 say of the governments?

Far the greater number of people in Europe belong to the white race. That continent is the home of many of the most enlightened and civilized nations of the world.

In the northern parts of Norway, Sweden and Russia, in the area marked Lapland on the map, page 149, and in Finland live many people of the yellow race, known as *Finns* and *Lapps*. These people, especially in Finland, have built many towns and some large cities.

Many people called *Tartars* have moved westward from Asia into Russia, settling chiefly in the basin of the Volga.

In the plains of Hungary there are remnants of tribes of yellow people that settled there long ago. They have made about the same progress as the white people that live on the same plains and that now greatly outnumber the yellow people.

Scotch Highlander

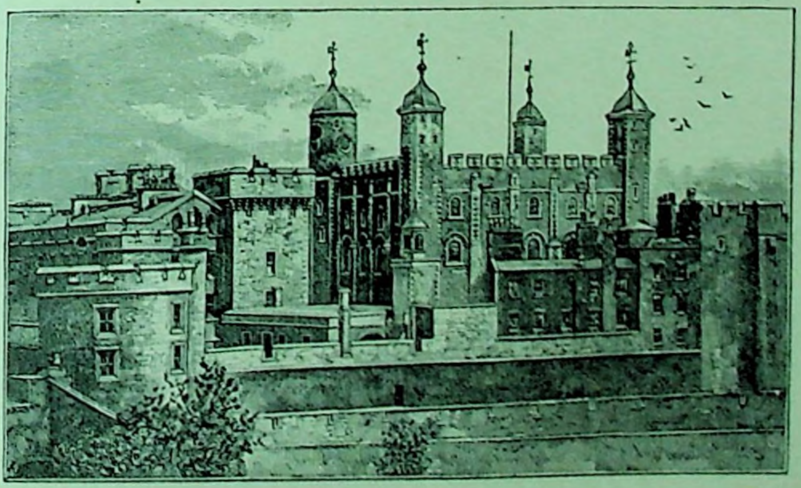
The Turks in the Balkan peninsula belong to the yellow race, but many white people live also in the same part of Europe.

With the exceptions above noted, the nations of Europe belong to the white race.

There are nearly five times as many people in Europe as in the United States. Europe is thus much more thickly settled than our own country.

We have seen (*lesson 30*) that the countries of Europe are either republics or limited monarchies and that the people have a large voice in the government. The Turks are Mohammedans; most of the churches in all the other parts of Europe belong to various branches of the Christian religion.

Topics: — White people in Europe; Finland and Lapland; Tartars; plains of Hungary; Turks; population of Europe; governments; religions.



Tower of London

102. Cities of the British Isles

The government of the British Isles is a limited monarchy. The ruler holds office by claim of birth, but his authority is limited by a constitution which gives the lawmaking power to a Parliament.

Parliament consists of two bodies, — the House of Commons and the House of Lords. The members of the former are elected by the people; the members of the latter are nobles and bishops.

The execution of the laws is in the hands of a *Prime Minister*, who is assisted by a *Cabinet*. As in our government, the members of the Cabinet supervise the foreign affairs, the treasury, the army and other departments.

The British Isles constitute the *United Kingdom of Great Britain and Ireland*. The United Kingdom, with all British colonies and other possessions, forms the *British empire*. The ruler of this empire appoints a *Governor* or a *Governor-General* for each colony or dependency. Some of the colonies take no part in governing themselves. Others elect their own officers, except Governors; but the British ruler retains authority to veto any bill passed by a colonial government.

The large British possessions, such as Canada, Australia and New Zealand, have Parliaments of their own.

The foreign commerce of the British Isles is carried on mostly through the great ports of London, Liverpool and Glasgow.

London, the capital of the British empire, controls most of the British trade with India, Australia and the mainland of Europe; also a large part of the trade with tropical America.

London, with its great trade, has grown to be the largest city and one of the chief seaports in the world.

Westminster Abbey

Among the famous buildings in London are Westminster Palace (*see page 41*), in which Parliament meets; Westminster Abbey, an old church in which many rulers of England and other famous men and women are entombed; London Tower, an ancient prison. From China and India this great port receives tea, silk, sugar, coffee, spices, indigo and other products of southeast Asia. Greece sends currants; Italy and Spain send olive oil and wine.

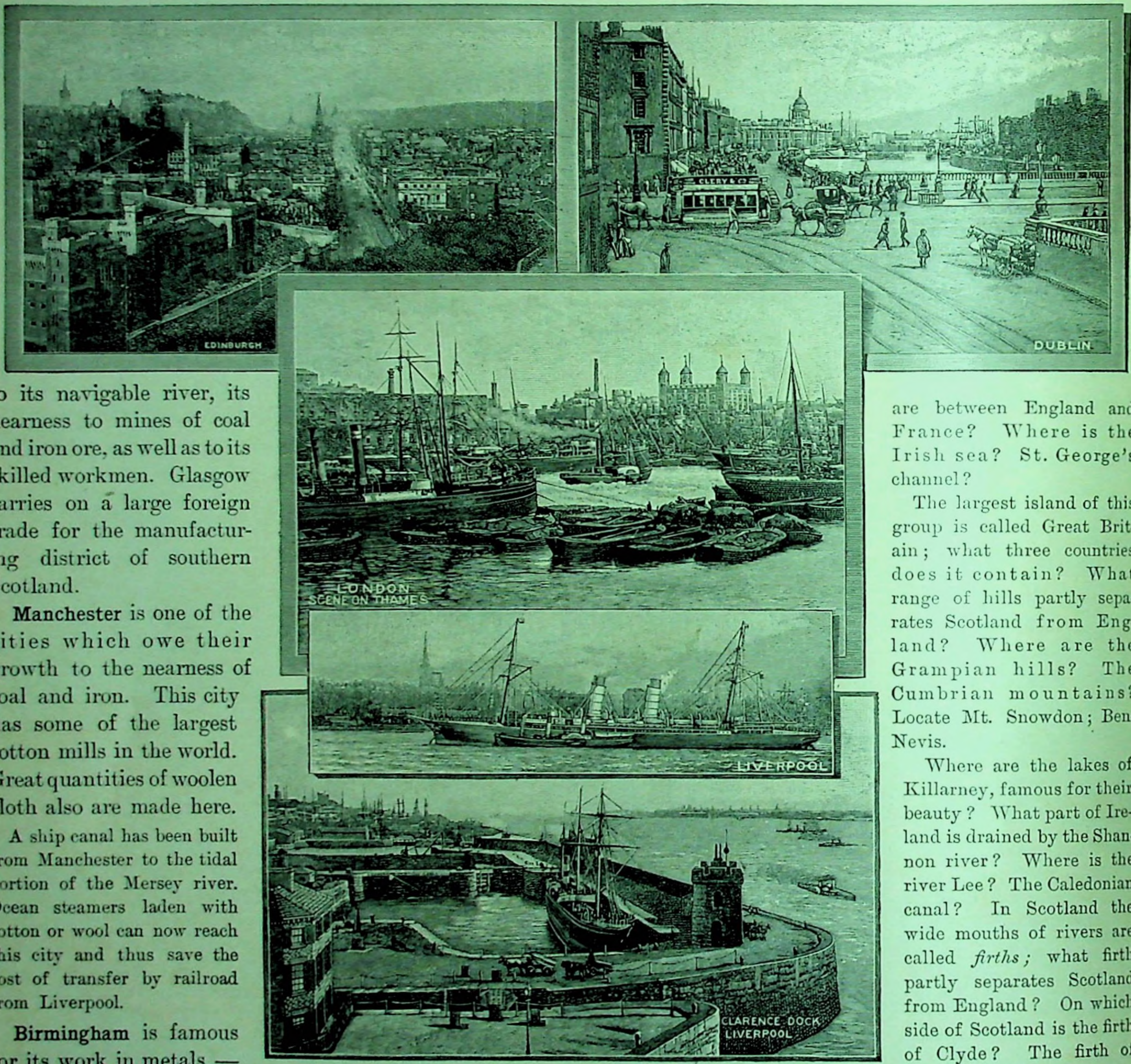
From the Baltic ports shiploads of lumber, wheat, cattle and wool reach London. Steamers from tropical America bring sugar, coffee, hides, rubber and cocoa. Australia and New Zealand ship chiefly wool and gold.

Liverpool is the principal port for the manufacturing district of northwest England. This port receives the raw materials from abroad and ships away the manufactured products.

The United States sends more products to Liverpool than to any other port in the world. Most valuable among these are cotton, grain and meats. Large quantities of wool are sent from

Argentina and from Australia to Liverpool. The exports of Liverpool are mostly cotton, woolen and silk cloth; cutlery and other kinds of hardware; heavy iron goods, such as engines, rails and armor plates.

Glasgow leads all other cities of Europe in shipbuilding. The success of the city in this industry is due chiefly to its navigable river, its nearness to mines of coal and iron ore, as well as to its skilled workmen. Glasgow carries on a large foreign trade for the manufacturing district of southern Scotland.



Manchester is one of the cities which owe their growth to the nearness of coal and iron. This city has some of the largest cotton mills in the world. Great quantities of woolen cloth also are made here.

A ship canal has been built from Manchester to the tidal portion of the Mersey river. Ocean steamers laden with cotton or wool can now reach this city and thus save the cost of transfer by railroad from Liverpool.

Birmingham is famous for its work in metals,—iron, copper and brass. Among its best known products are screws, nails, pens and firearms. **Sheffield** manufactures heavy iron goods and cutlery.

Bradford is noted for its woolen manufactures. **Cambridge** and **Oxford** have famous universities.

Dublin is the center of trade for middle Ireland. This city has an excellent university.

Belfast manufactures ships and fine Irish linens. Flax of the best quality thrives in Ireland.

Edinburgh, the capital of Scotland, contains several colleges. **Dundee** has the largest linen mills in Great Britain.

Cardiff is the seat of the coal and the iron trade of southern Wales.

Map Studies:—What ocean is west of the British Isles? What large sea is on the east? What strait and channel are between England and France? Where is the Irish sea? St. George's channel?

The largest island of this group is called Great Britain; what three countries does it contain? What range of hills partly separates Scotland from England? Where are the Grampian hills? The Cumbrian mountains? Locate Mt. Snowdon; Ben-Nevis.

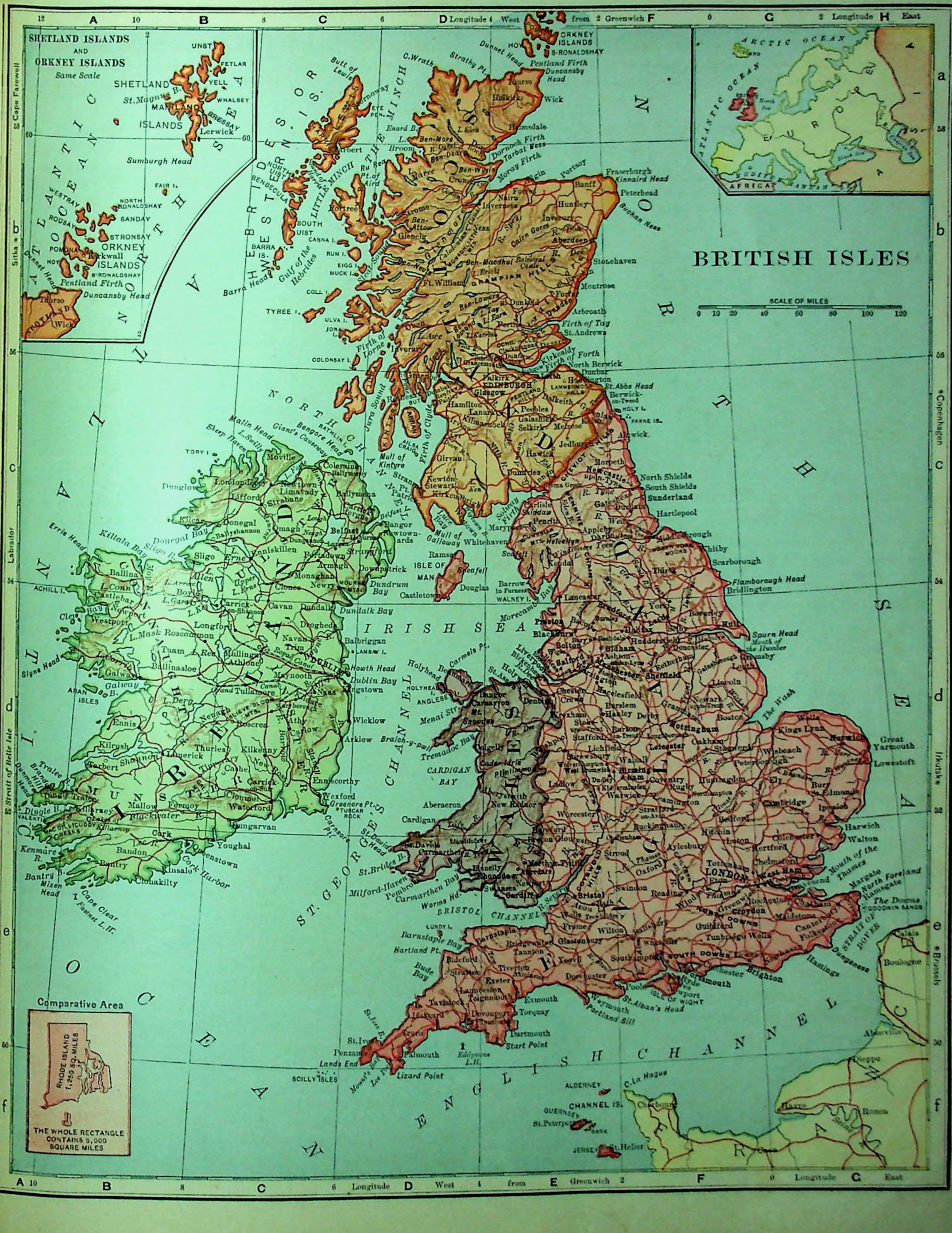
Where are the lakes of Killarney, famous for their beauty? What part of Ireland is drained by the Shannon river? Where is the river Lee? The Caledonian canal? In Scotland the wide mouths of rivers are called *firths;* what firth partly separates Scotland from England? On which side of Scotland is the firth of Clyde? The firth of Forth?

Into what body of water does the river Thames flow? The river Severn? The river Mersey?

Locate the Orkney islands; the Hebrides; the isle of Man; Land's End.

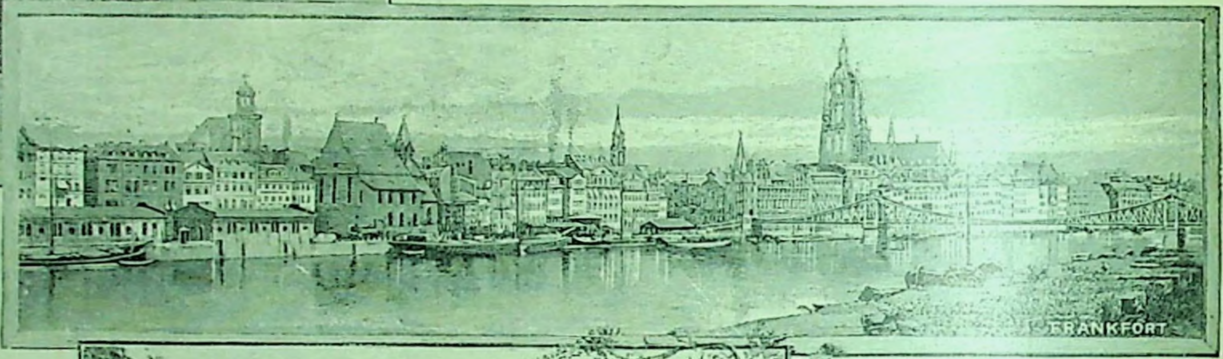
Name a large city on the Thames river; on the broad mouth of the Mersey river; on the Clyde river; near the south shore of the firth of Forth; on the river Humber. Near what bay is the capital of Ireland situated?

On what bodies of water would a steamer sail in going from New York to Liverpool? From New Orleans to London?


BRITISH ISLES
SCALE OF MILES
0 10 20 40 60 80 100 120
SHETLAND ISLANDS AND ORKNEY ISLANDS
Same Scale
SHETLAND
MAINLAND
ISLANDS
Lerwick
Sumburgh Head
Fair I.
ORKNEY ISLANDS
Kirkwall
Pentland Firth
Duncansby Head
ATLANTIC OCEAN
NORTH SEA
EUROPE
AFRICA
Comparative Area
RHODE ISLAND 1,250 SQ. MILES
THE WHOLE RECTANGLE CONTAINS 5,000 SQUARE MILES
Longitude West from Greenwich
Longitude East
SCOTLAND
IRELAND
ENGLAND
WALES
ISLE OF MAN
IRISH SEA
NORTH CHANNEL
ST. GEORGE'S CHANNEL
BRISTOL CHANNEL
ENGLISH CHANNEL
STRAIT OF DOVER
CHANNEL IS.
FRANCE
Edinburgh
Glasgow
Aberdeen
Inverness
Dundee
Perth
Belfast
Londonderry
Dublin
Cork
Limerick
Galway
Waterford
Liverpool
Manchester
Leeds
Sheffield
Birmingham
Bristol
Cardiff
London
Plymouth
Portsmouth
Southampton
Brighton
Dover
Newcastle
Hull
York
Norwich
Cambridge
Oxford
Lands End
Lizard Point
Isle of Wight
Ulster
Leinster
Munster
Connaught
Outer Hebrides
Grampian Hills
Cheviot Hills
The Wash
Cardigan Bay
Copenhagen
Brussels

103. Countries and Cities of Lowland Europe, — Western Part

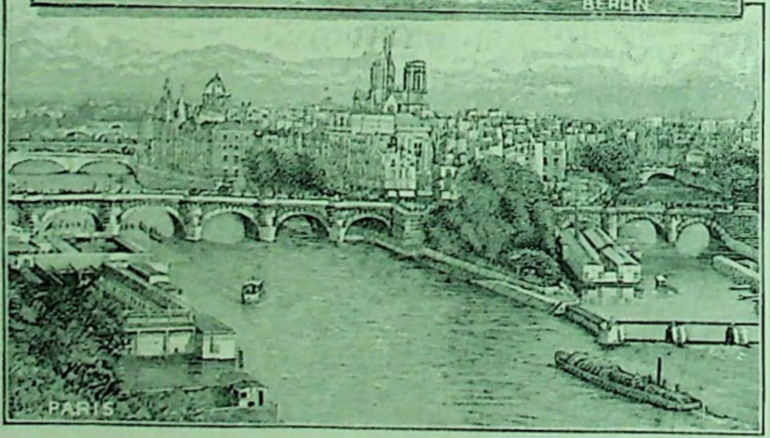
GERMANY. Germany has rich coal and iron mines, beds of porcelain clay, and sand for making glass. The river valleys of this country are famous for their wine grapes. Large areas are planted with sugar beets and with cereals.



This country imports cotton from the United States, wool and flax from Russia and Hungary and raw silk from Italy.

The principal manufactures of Germany are cloth, iron articles, beet sugar, glass and porcelain. Large quantities of these articles are sent to the United States. Besides cotton our country sends grain, meat, petroleum and tobacco to Germany, — largely through the port of Hamburg.

Germany is an important commercial country.



Berlin, the capital, is the third city in size in Europe, and thus ranks next to London and Paris. Berlin is a great trade center and the seat of a famous university.

Leipzig has a large university and is noted for book publishing. **Munich** and **Dresden** have great galleries of painting and sculpture.

Hamburg, on the tide water of the Elbe, is the leading port on the mainland of Europe. **Essen** is famous for the manufacture of iron and steel.

In the World War in 1914–1918 Germany lost some of her territory. The province of Alsace-Lorraine, which was taken from France in 1871, has been given back to that country. Alsace-Lorraine is a region of prosperous farms. It has many rich coal and iron mines. The part of the country of Poland of which Germany had held possession has been joined with the rest of Polish territory and has now become independent. Before the war Germany had large possessions along the coasts of Africa and some islands in the Pacific ocean. At the present time these are under the protection of other nations.

FRANCE. The products and the industries of France resemble those of Germany. It has immense mills and factories producing iron articles, linen and silk goods, porcelain and glassware. Its fields yield great quantities of wheat, sugar beets and grapes. There are also in southern France large mulberry groves which supply food to countless silkworms.

Paris, the capital, is the third largest city in the world, being surpassed only by London and New York. Paris is situated on the Seine river and is noted for its art galleries and fine buildings. This city is the railroad center of France and leads in the country's commerce.

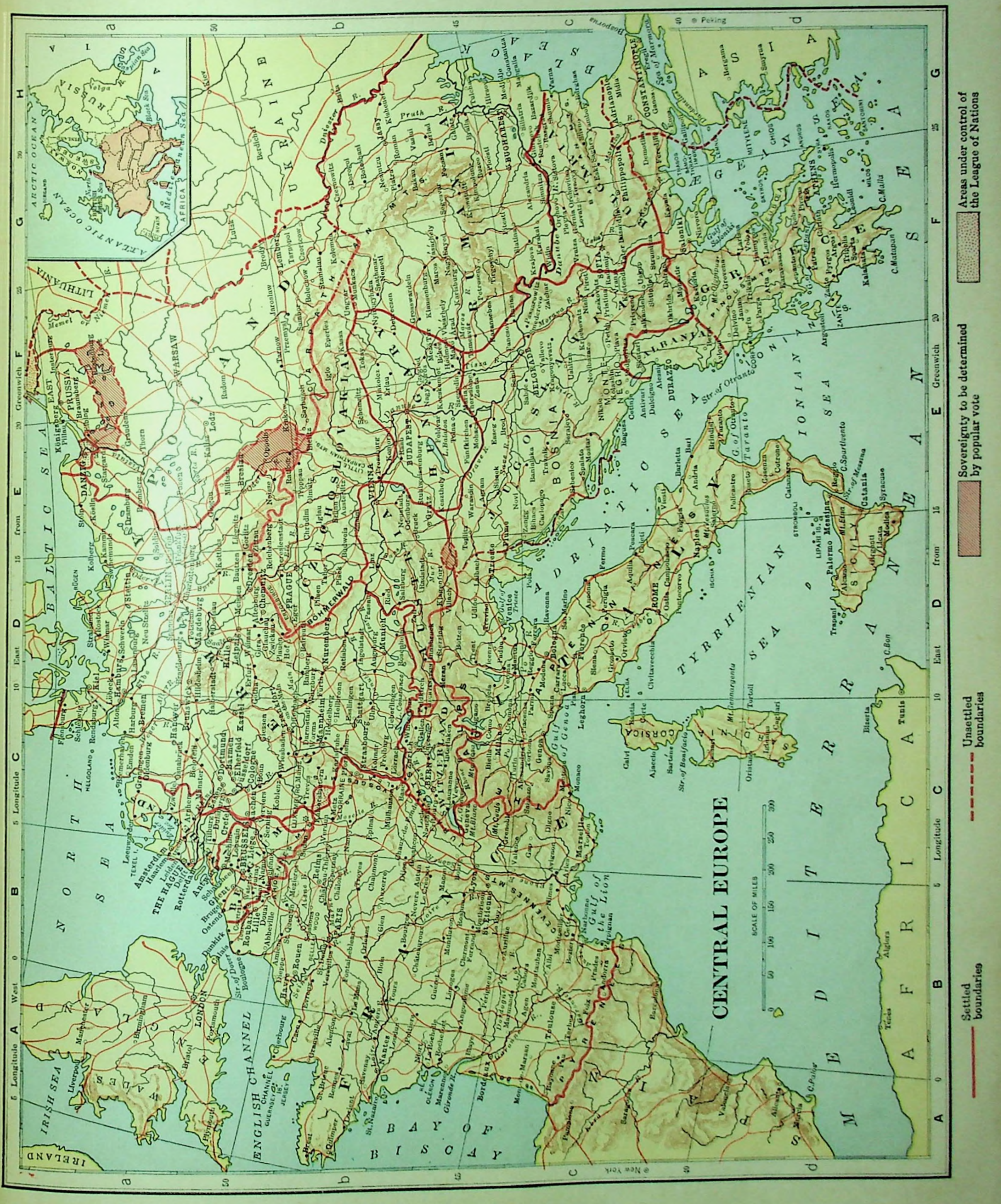
Among the articles sent from Paris to New York are leather goods, feathers, buttons, fans and jewelry.

Among the places of greatest interest in Paris are the art galleries of the Louvre and Luxemburg, the tomb of Napoleon, the Eiffel tower and various parks and churches. In and round the city are many places of great historical interest.

Havre, at the mouth of the Seine, is the port of Paris. Steamers from Havre reach nearly all great seaports. Among the French exports to our country are silks, woolens and millinery goods. The United States sends about the same kinds of goods to Havre as to Hamburg.

Lyon, the center of the silk manufactures, is not far from the coal region of the Cevennes mountains, nor from the silkworm district of southern France.

Marseille is the largest port of this country. A canal from the Rhone river to this city makes it the chief port of the Rhone valley. The Garonne basin produces great quantities of grapes; **Toulouse** is in the vineyard district



CENTRAL EUROPE

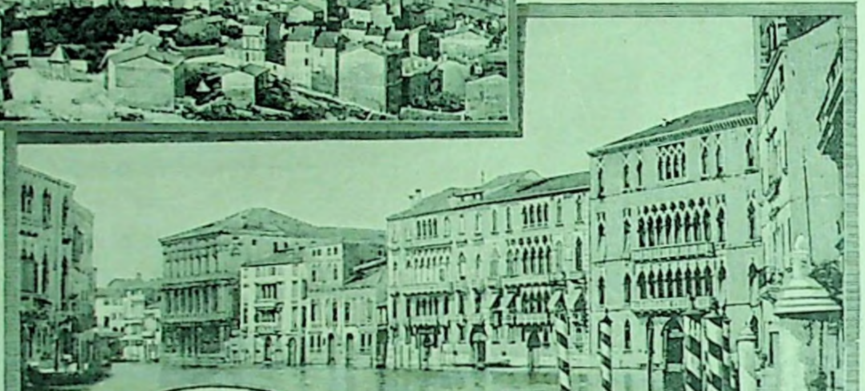
of this basin. This city and **Bordeaux** are famous for the manufacture of red wines.

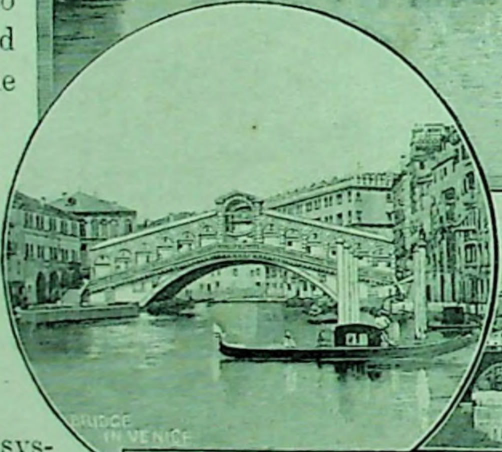
Lille is in the flax-growing region of northern France and is near coal mines. This city has large mills for the manufacture of linen cloth and thread.

BELGIUM. The small kingdom of Belgium has valuable coal mines and is in the flax district. Laces and linens are important manufactures in this country.

Marseille

Sugar beets are a leading crop in Belgium. Here are also beds of excellent sand for glass making. The most valuable exports from this country to the United States are beet sugar, glassware, cloth and firearms.





Antwerp, the chief port, is the center of the railroad and canal systems which reach nearly all parts of Belgium.

Brussels, the capital, makes carpets and laces. **Liege** has iron and steel plants.

THE NETHERLANDS, OR HOLLAND. The people of this small kingdom are largely engaged in dairying and in raising cereals. Holland has many colonies, among which are Java, Sumatra and Dutch Guiana. These colonies send spices, tea, coffee, tobacco and other products to Holland.

Constantinople, on the Bosporus

Amsterdam and **Rotterdam** are important ports. Many skillful diamond cutters live in these cities. Diamonds and tobacco are the principal exports from Holland to our country. **The Hague** is the seat of government.

Large areas of Holland are below sea level. Dikes or banks have been built to keep out the sea. Many canals cross the country.

DENMARK. This kingdom consists of a peninsula and many islands. It resembles Holland in its products. Southern Greenland is a possession of Denmark. Iceland was formerly a colony, but is now independent. **Copenhagen** is the capital and most important city.

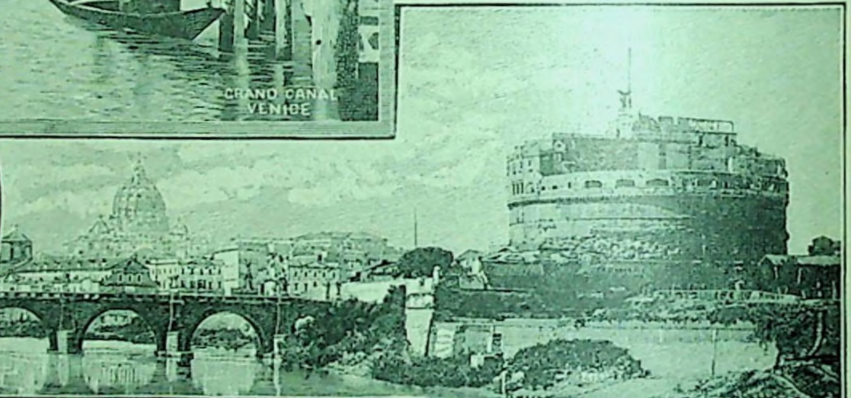
104. Mediterranean Countries and Cities

SPAIN. **Madrid,** the capital and largest city of the kingdom of Spain, is in the central plateau.

Barcelona is the chief city of eastern Spain. This city exports fruits, olive oil, silk and wine. **Valencia** is noted for its fine silk manufactures. **Malaga** is a wine and fruit port.

PORTUGAL. **Lisbon** is the principal trade center of the republic of Portugal. This city, as well as **Oporto** farther north, has a large trade in wine and in olive oil.

ITALY. The leading exports of this kingdom are silks, wine, oil and fruits. The imports are raw cotton, sugar, coffee and other food supplies. **Naples,** on the beautiful bay of the same name, is the largest city in Italy.


Rome

Rome, the capital, contains the Vatican, or residence of the Pope; and St. Peter's, the largest cathedral in the world. This city is famous for its historic ruins.

Milan is the most important city in the Po valley. **Genoa** is the chief port of northwest Italy. **Florence** and **Venice** have famous art galleries. Venice is built on islands. **Trieste** is an important port on the Adriatic.

THE BALKAN PENINSULA. This part of Europe is made up of several countries. They were once part of the Turkish Empire. One after another they have declared their independence.

GREECE is the most southern of the Balkan countries. It is famous for its history and for the ruins of its ancient temples and statues.

The most famous temples of Greece were built in Athens on a hill known as the Acropolis. Many of the statues and the ruins of some of the temples still exist.

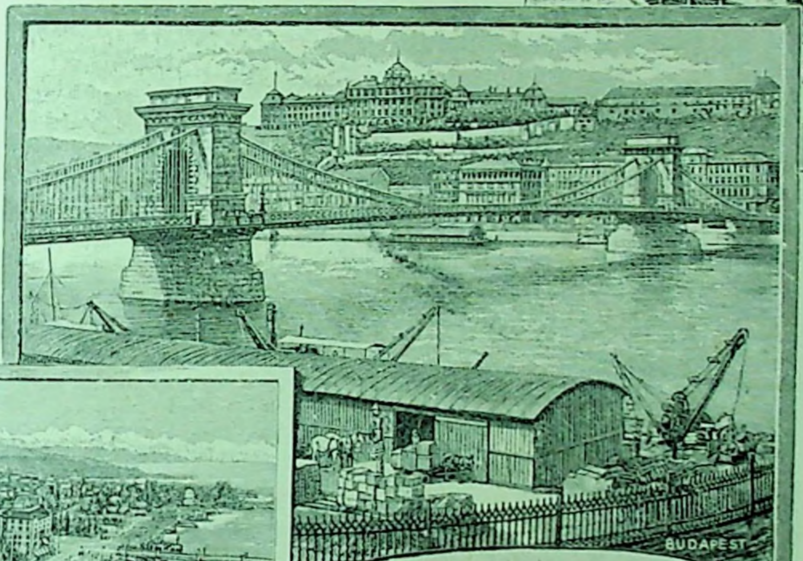
The Corinthian canal cuts Greece into two parts and makes the southern peninsula an island.

Athens is the capital of Greece. **Saloniki** is an important port. It exports hides and sheepskins. Nearly all the dried currants in the world come from Greece.

TURKEY. **Constantinople** is the most important port of southeastern Europe. It is situated on the strait of Bosporus and is therefore the key to the Black sea.

Turkey no longer controls the waters which lead to the Black sea. They were made free to all nations at the close of the World War.

RUMANIA and BULGARIA on the Black sea and JUGOSLAVIA and little ALBANIA on the Adriatic are other Balkan states. The trade of the United States with these countries is very small.



Zurich

Geneva

Find the capitals of these countries.

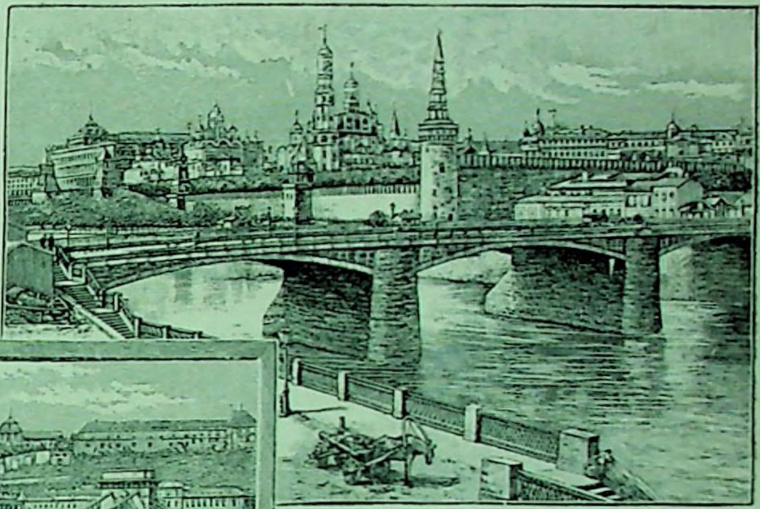
105. Other Countries and Cities of Europe

SWITZERLAND. The swift streams of this mountain republic supply good water power. Raw silk is brought from Italy, cotton from our country, and flax from various countries of Europe. Switzerland manufactures laces, silks and cotton cloth. **Zurich** is the principal manufacturing city. **Geneva** is noted for its watches, clocks and music boxes. **Bern** is the capital. Dairying and hotel-keeping are leading occupations. Every summer thousands of tourists visit the country to enjoy its beauties.

AUSTRIA. Parts of Austria are very mountainous. As in other countries of Central Europe, forests grow on the slopes. Cattle and sheep feed in the pastures. Grapes, grain, sugar beets and other vegetables are raised in the valleys. Most of the people are Germans. **Vienna** is the capital. It is a railroad center and river port. It contains a large university.

HUNGARY lies in the heart of the Danube valley. Great quantities of grain are raised here. The capital city is **Budapest,** the trade center of the Hungarian plain.

CZECHOSLOVAKIA lies north of Austria and Hungary. Bohemia, in the west, is rich in minerals and has many manufactures. **Prague** is the capital.



Kremlin, Moscow

RUSSIA. **Moscow** is the capital and railroad center. **Petrograd,** the chief commercial city, is connected by railroads and canals with all parts of the country. The chief exports are wheat, flax, lumber and wool.

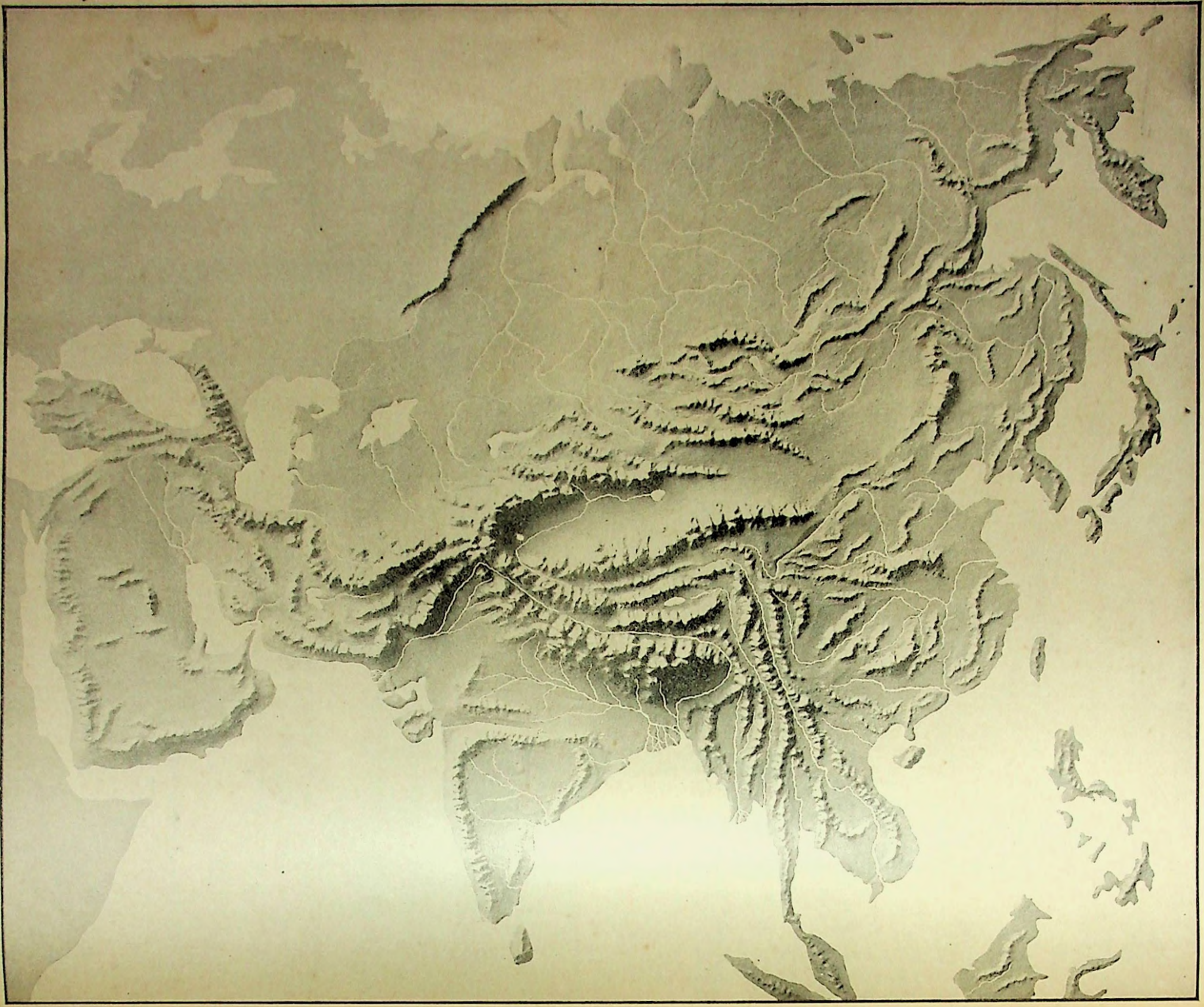
BALTIC STATES. From the part of Russia on the Baltic sea LITHUANIA, LATVIA and ESTHONIA have been formed. **Riga** is the chief port.

FINLAND is a land of many lakes. Lumber and pulp are exported. **Helsingfors** is the capital.

UKRAINE, another Russian province, has declared its independence. Much wheat is raised here. **Odessa** is one of the world's largest wheat ports.

POLAND, in the Vistula valley, is an agricultural country. It has rich minerals also. The cities near the coal and iron mines manufacture cotton, leather, and iron and steel goods. Much beet sugar is raised. **Warsaw** is the capital.

NORWAY AND SWEDEN form the Scandinavian peninsula. **Christiania** is the chief port of Norway. It ships much lumber. **Bergen** is the second port. **Stockholm** is the principal city of Sweden. **Goteborg** is the leading port.



RELIEF MAP OF ASIA

106. Highland Regions

Asia covers about one twelfth of the earth's surface, includes nearly one third of the total land surface and is nearly as large as all America.

Tell what you can about the highland of Tibet. *See lesson 16.*

Three huge mountain ranges rise above the plateau of Tibet. These are the Kuenlun on the north, the Karakoram on the northwest, and the Himalaya on the south. Large portions of the *plateau* are over three miles above sea level, and many of the *peaks* are over five miles high. The highlands of Tibet and Bolivia are on almost opposite sides of the earth.

The word *Himalaya* means the *abode of snow.* Even in summer the snow line is about two miles below the highest summits.

Mt. Everest is the highest peak known. It rises more than five and a half miles above sea level.

(*Continued on page 162.*)

Map Studies: — Study the relief map and describe as well as you can the surface of Asia. Compare it with Europe.

Which is the larger, North America or Asia? What strait separates these continents at the point they approach nearest to each other? Name the smallest ocean lying between them. What other oceans partly surround Asia? What continent is west of Asia? Southwest?

Sketch the general outline of Asia, using three or four straight lines. What is the general direction of the Arctic coast? Of the Pacific coast? Of the Indian coast?

Draw each of these coasts as shown on the guide map of Asia in the supplement. Which of these coasts is the most irregular? Which is bordered by the greatest number of islands?

What seas partly surround the peninsula of Kamchatka? The peninsula of Korea? The peninsula of Dekkan? The peninsula of Arabia?

Locate the Japan islands; the Philippine islands; Borneo; Sumatra; Java (*see map on page 187*); Ceylon.

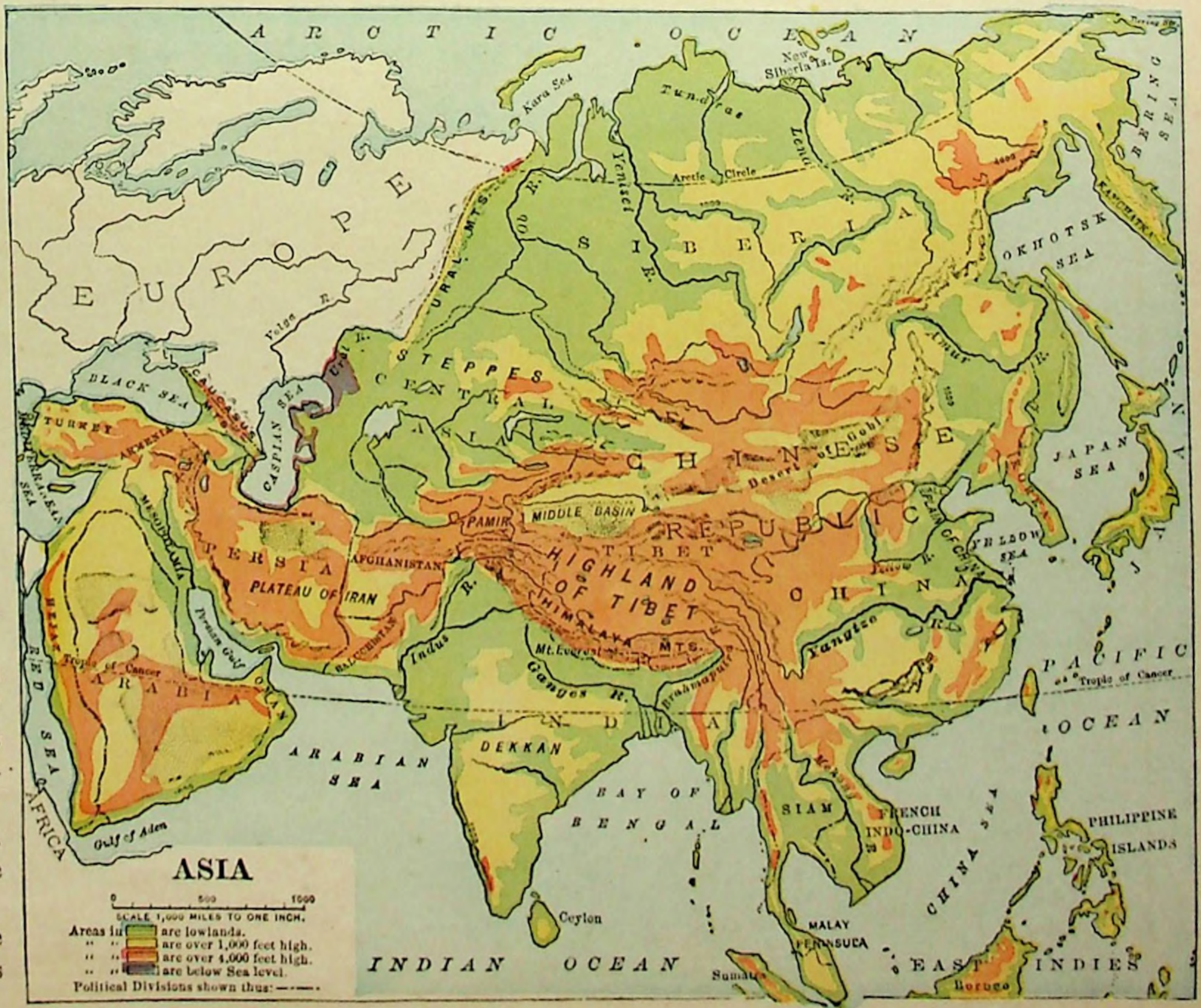
What have you learned about the plateau or highland of Tibet? *See lesson 16.* On which side of this highland is the great plain of Siberia? The plain of China? The plains of India? What does lesson 16 tell about Siberia? China? India?

Name three rivers that cross the plain of Siberia. Into what ocean do they flow? Name two rivers that flow across the plain of China. Into what sea does the Mekong river flow? Where does the Mekong rise?

What river drains most of the southern slope of the Himalaya mountains? What large river rises north of these mountains and flows to the bay of Bengal? Name another river rising north of the same mountains and flowing into the Arabian sea. What two rivers unite and flow into the Persian gulf? Name five seas that partly surround southwest Asia.

Locate the sea of Aral; lake Baikal; the Khingan mountains; the desert of Gobi; the Altai mountains; the Karakoram mountains.

What heat belt lies between the tropic of Cancer and the highland of Tibet? What belt reaches from the same highland to the Arctic circle? Which heat belt in Europe and Asia include the greatest area?



We have learned that the air near the surface of the earth is much denser than at a great height above the surface. It is thought that about one half of all the air and three fourths of all the moisture in the air are below the level of the top of the Himalaya range.

Just north of the Himalaya chain the Indus and Brahmaputra rivers, the former flowing westward and the latter eastward, have cut deep valleys in the plateau and deep gorges through the mountains, thus reaching the lowlands on the south. The upper parts of these rivers are fed chiefly by snow melting on the lofty mountains. Along the sides of these streams are found most of the people who live in the highland of Tibet. They have small gardens and herds of yaks. To the natives of Tibet the yaks are as useful as cattle are to us.

Owing to the high border ranges the plateau of Tibet is dry. Streams from the mountains run into the valleys, but there is not enough water to overflow some of the wide hollows and reach the sea. The lakes and marshes in these inclosed valleys are therefore salt. In some places, where the lakes and marshes dry away, the surface is covered with layers of white salt.

The lakes in the western part of Tibet are the highest in the world, being about 17,000 feet above sea level.

The inner part of Tibet is almost a desert. Owing to its great height it is very cold, except during the days of a short summer season. Herds of wild yaks and musk deer search out the grassy places. Few people live in the inner part of Tibet.

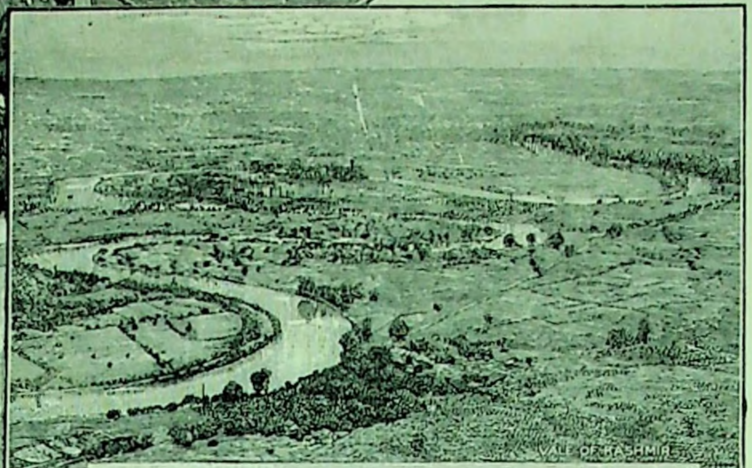
One of the pictures on this page shows part of the vale of Kashmir, situated among the Himalayas, not far from the place where the Indus river crosses the range. The level land of this fertile vale or valley was once the bed of a lake. The river that now wanders across the lake plain is a branch of the Indus. The part shown in the picture is about a mile above sea level, and the water must flow a thousand miles or more before it reaches the sea.

On the east the highland of Tibet sends long streams down the slopes of China. Several large rivers from the highland bend also to the southeast, flowing in long valleys between lofty ranges which extend to the peninsulas of southeast Asia.

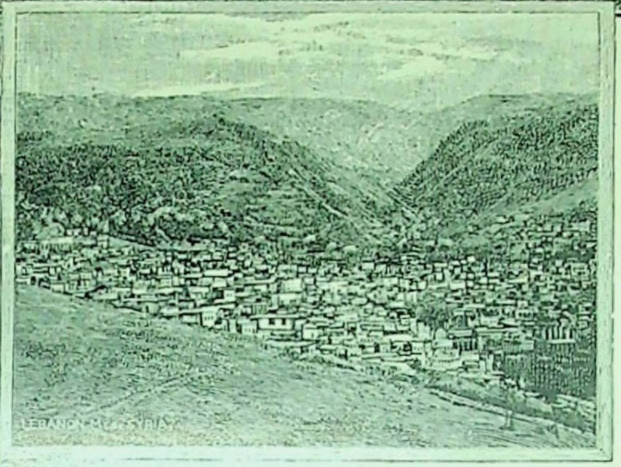
At the western end of the highland of Tibet stands the Pamir plateau. We may think of this as the mountain center of Asia. Almost all the loftiest ranges of the continent radiate from the Pamir plateau.

CROSSING THE HIMALAYAS

MT. EVEREST


VALE OF KASHMIR

HIMALAYAN VILLAGE


LEBANON MTS., SYRIA

Thus, eastward stretch the three huge ranges of Tibet; towards the northeast run the Tien Shan mountains, along the northern border of a great interior depression known as the *Middle Basin;* the Sulaiman range extends southward to the coast and cuts off India from southwest Asia; the high Hindu Kush chain stretches westward along the northern borders of the plateau of Iran.

Northeast of the Tien Shan chain are the many small ranges of the Altai mountains; still farther northeast the Yablonoi and Stanovoi ranges continue almost to Bering strait.

South and southeast of the Altai highland is a vast inland basin that is almost rainless. The eastern part is called the *desert of Gobi;* the western part is the *Middle Basin.* What mountain range lies along the eastern border of the desert of Gobi? What high plateau is south of the Middle Basin?

The desert of Gobi is about as high as the Great Basin in our country, namely, 4000 feet; the Middle Basin is not so high.

(*Continued on page 164.*)

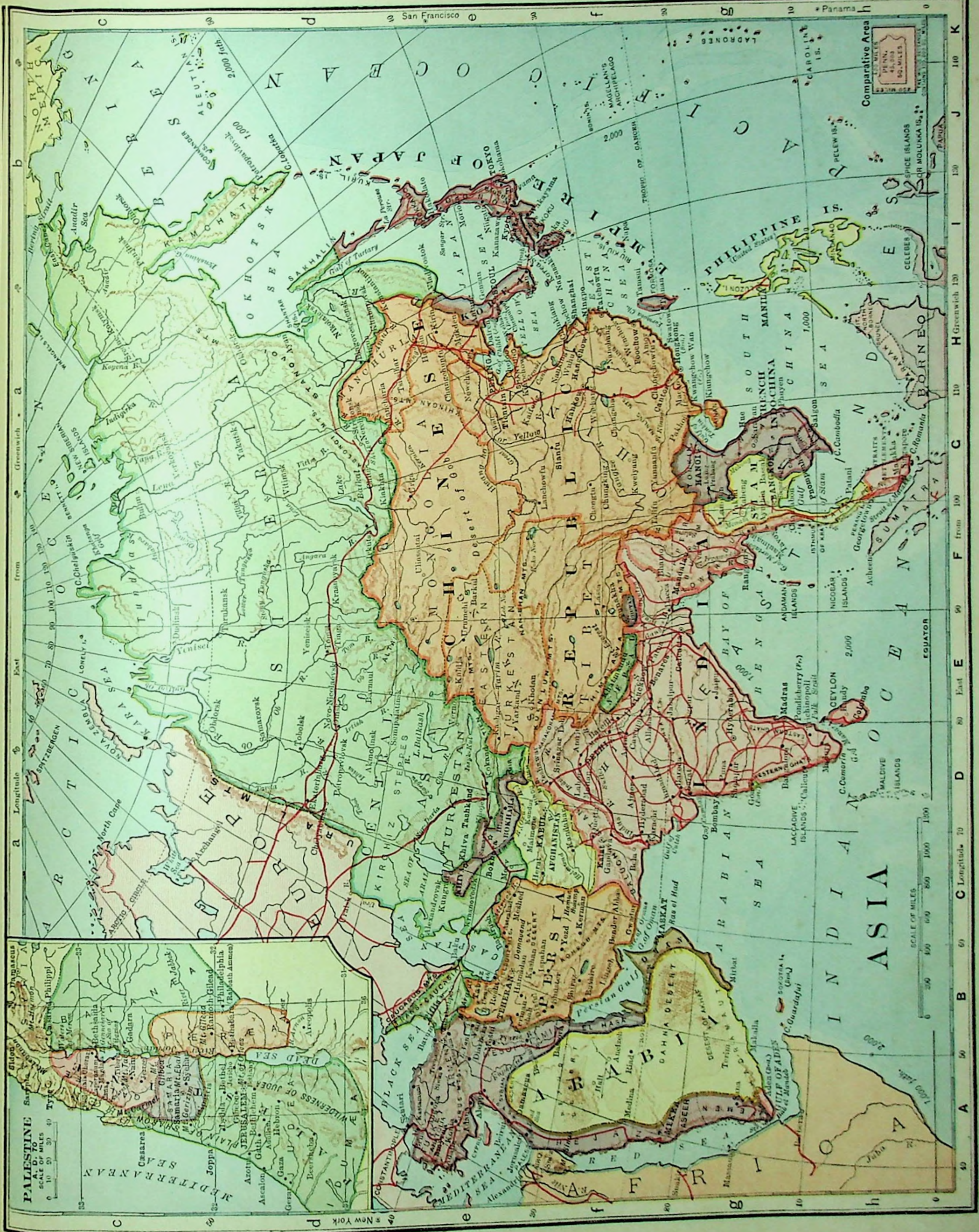
Map Studies: — What large country lies in northern Asia? What oceans border on it? What rivers flow through Siberia? In what general direction do most of these rivers flow?

What country is south of Siberia? What great river partly separates Siberia from the republic of China? What great highland occupies the western part of this republic? Name two rivers flowing from this highland across the plain of China. What desert occupies part of northern China?

What country occupies the peninsula between the Japan and the Yellow seas? What island empire lies east of China and Korea? Name the largest island of this group.

What large country is south of the highland of Tibet? On which side of the bay of Bengal is the part of India known as Burma? The part known as Hindustan? What large river is near the western border of India? Where are Indo-China and Siam?

What gulf and two large seas form part of the boundary of Persia? What does the relief map show about Persia? What two countries are between Persia and India? On what gulf and seas do the countries of southwest Asia border? Name all these countries.


ASIA
PALESTINE A.D. 70
Comparative Area
PENN.
ARCTIC OCEAN
PACIFIC OCEAN
INDIAN OCEAN
ARABIAN SEA
BAY OF BENGAL
SOUTH CHINA SEA
MEDITERRANEAN SEA
RUSSIA IN EUROPE
SIBERIA
CENTRAL ASIA
CHINESE REPUBLIC
MONGOLIA
MANCHURIA
TIBET
EASTERN TURKESTAN
INDIA
PERSIA
AFGHANISTAN
ARABIA
SIAM
FRENCH INDO-CHINA
JAPAN
PHILIPPINE IS.
BORNEO
SUMATRA
AFRICA
EQUATOR
TROPIC OF CANCER
ARCTIC CIRCLE
Longitude East from Greenwich
San Francisco
Panama
New York
SCALE OF MILES

The Basin regions of Asia and North America are alike in many respects. They are at about the same distance from the equator, being nearly halfway to the north pole. Their surfaces are broken by low ranges, between which lie long valleys. None of their streams reach the sea, but all waste away or flow into salt lakes or marshes. Strong winds which sweep over portions of the surface lay bare the rocky ledges and drift the sand into dunes. Most of the towns of the Asiatic basin are built near the mountains, where streams flow out into the valleys. These streams are fed by rain or melting snow on the high border ranges.

Less than half the region marked *Gobi* on the maps is really a barren waste. The desert runs east and west through the central portion, and even that part is not so barren as the Middle Basin farther west. In eastern Gobi rains sometimes fall in the summer. Grass then springs up and furnishes food for the camels and horses in the caravans which carry tea from China to Siberia, whence it is taken to Russia. Over a large part of the so-called *desert of Gobi* camels and sheep eke out a living on grass and bushes.

When it is noon in the Middle Basin it is midnight in the Great Basin of North America. Can you tell why?

The people in the western part of the Basin region of Asia lead a wretched life. Streams flowing at one time may be dry at another, and river valleys may thus become barren. The people are then forced to roam about in search of pastures for their cattle and sheep. The old towns are sometimes buried by drifting sand.

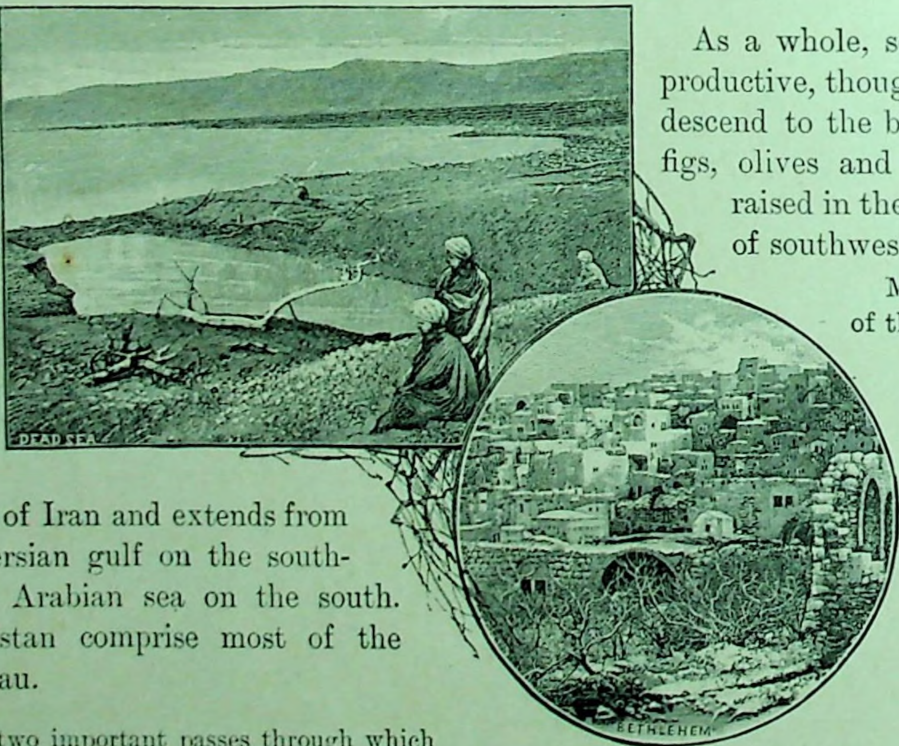
The southwest portion of Asia is mostly a plateau region forming part of the great Asian highland.

Where is the plateau of Iran? What mountains are on the northeast? What sea and gulf are on the south and southwest?

The plateau of Iran is about one third as high as the plateau of Tibet and is almost inclosed by mountains.

The plateau of Iran resembles the Great Basin of North America. Both have small streams, salt lakes and salt swamps; in both the valleys are covered with gravel, sand or finer soil washed from the ranges; in places the sand drifts into dunes; the people settle chiefly near the ranges, where the mountain streams can easily be used to irrigate the land; canals and ditches lead the water over the cultivated districts; large areas of ~~both~~ regions are dry, but other parts are fertile.

Persia occupies the greater part of the plateau of Iran and extends from the Caspian sea to the Persian gulf on the southwest, and an arm of the Arabian sea on the south. Afghanistan and Baluchistan comprise most of the eastern part of this plateau.



In the Sulaiman range are two important passes through which caravans have gone for centuries. The Bolan pass is one of the chief gateways between the high region of Iran and the low fertile plains south of the Himalaya mountains. *See map on page 173.* This pass has been the scene of many fierce conflicts between caravan guards and the natives of the mountain region, but several years ago the native tribes were subdued.

Another low place in the crest of the Sulaiman range is the famous Khaibar pass northeast of the Bolan. Through this pass the roadway crosses the range at the height of only about half a mile above sea level.

Southwest of the plateau of Iran lies a small but historic river valley sloping to the Persian gulf. The greater part of this valley consists of the flood plains of two rivers, the Tigris and Euphrates. This part of southwest Asia is known as Mesopotamia.

Khaibar pass

For many centuries this valley has been peopled by the white race. Long ago the people had fine systems of canals to irrigate the land. Then the crops of wheat, figs and dates were large; great cities were built and the nation was prosperous. For a long time, however, the rulers have been weak, the land has been overrun by thieving tribes, and the canals are now in ruins. Many parts of the valley that were once fertile have become sandy and barren. Since the World War many improvements have been made here.

The portion of Asia extending westward from the plateau of Iran is almost surrounded by a gulf and four seas. The region consists mostly of a low plateau.

Name the countries in this part of Asia. Which lies in the valley of two rivers? Name four bordering seas. What small sea and two straits in part separate Asia from southeast Europe?

As a whole, southwest Asia is not very productive, though many small fertile slopes descend to the border seas. They produce figs, olives and grapes. Many sheep are raised in the grass lands of the plateaus of southwest Asia.

Mt. Ararat, in the northern part of this plateau region, is a volcanic cone a little more than three and a fourth miles high.

Along the extreme eastern shore of the Mediterranean sea are Syria and Palestine. The ancient country of Palestine is famous in Bible history. The *Dead sea*, a salt lake in this region, is in one of the most historic valleys on the earth. The water of this sea is about ten times as salt as that of the ocean and is also very bitter. The sea is not quite fifty miles long. Its surface is about one fourth of a mile below sea level.

North of the Dead sea is a beautiful lake known as the *sea of Galilee.* This lake also is below sea level, but its water is fresh, for the river Jordan forms its outlet and flows into the Dead sea.

The Jordan and the two lakes are in one long valley, shut in by highlands on both sides. One low range near the southwest shore of the Dead sea is made of rock salt and is about six miles in length. Jerusalem and Bethlehem are a few miles west of the northern part of the Dead sea.

In general, the peninsula of Arabia is a desert region, but there are many narrow fertile valleys near the mountain ranges, where dates and wheat are raised and where camels and horses find good grazing lands. The hilly slopes near the entrance to the Red sea have for ages been famous for their crops of coffee.

Cedar of Lebanon

Some of the fertile valleys of Arabia are thickly settled. Until recent years the chiefs have tried to keep travelers out of the country. Many of the chiefs have great wealth and fine buildings.

Topics: — Size of Asia; ranges in Tibet; Himalaya mountains; Mt. Everest; Indus and Brahmaputra rivers; people of Tibet; climate and streams of Tibet; vale of Kashmir; east slope of Tibet; Pamir plateau; Middle Basin and desert of Gobi; plateau of Iran; Persia; passes of the Sulaiman mountains; Tigris and Euphrates valley; some products of southwest Asia; Mt. Ararat; Palestine; Dead sea; sea of Galilee and Jordan river; peninsula of Arabia; coffee.

107. Arctic and Caspian Slopes

The northern part of Eurasia consists mainly of a low coastal plain. The Ural mountains run north and south across the plain and form part of the boundary between Asia and Europe.

What does lesson 16 tell about the plain of Siberia? Name three rivers flowing across this plain. Where do they rise? Which of these rivers, through one of its branches, receives the overflow of lake Baikal?

This lake is the largest body of fresh water in Asia, but it is not quite half so large as lake Superior. The water is very deep and abounds in salmon. In summer many seals are caught along its shores. It is curious to find seals in this lake, for they are usually seen only in the oceans.

Russian traders navigate lake Baikal while it is open, and when it freezes they carry on trade by sledges across it. This lake is about one fourth of a mile above sea level and is almost encircled by forested mountain slopes.

Along the Arctic coast of Siberia the dreary frozen tundras resemble the Arctic plains in North America.

Fossil elephants are found in the gravelly river banks of the Siberian tundras. These animals had woolly coverings that fitted them to live in the cold plains. The "woolly elephants" are unlike any now living on the earth; yet the flesh of these great beasts, after having been buried perhaps for many centuries in the frozen ground, is sometimes found well preserved and is eaten by dogs. The tusks of these fossil elephants have long supplied part of the ivory so finely carved in Japan and China.

South of the tundras, plains covered with forests extend southward to the Altai mountains and southwestward to grassy plains round the Caspian sea.

A railroad extends from Russia across Siberia to the Pacific coast. Except where the railroad now runs, the great rivers form the main highways of trade and travel. Turn to the map on page 163 and you will see that the Ob, Yenisei and Lena rivers branch towards one another in such a manner that, except in two narrow places, there is a waterway from the Ural mountains to the Stanovoi range. In summer many steamers navigate the rivers, and in winter the smoothly frozen surfaces of the streams make excellent roads. The winter travel is mainly on sledges drawn by deer.

The southwest part of the northern plain of Asia consists of treeless but grassy plains, there called *steppes.* They are drained mostly towards the Caspian and Aral seas. As the region is low and far inland it has only light rainfall and is therefore almost treeless. East of the Caspian sea it is desertlike and barren, except where streams from the mountains are led aside in canals to irrigate the land.

The grass in any one part of this region is not sufficient to support the cattle and sheep. The people therefore wander with their herds from place to place, living in tents and carrying their few possessions with them. Such wandering people are called *nomads.*

The surface of the Caspian sea is lower than the level of the ocean, but the surface of the Aral sea is higher. Both these seas are salt. The Caspian sea is more than four times as large as lake Superior. Thousands of people earn their living by catching fish in the Caspian sea or in the rivers that flow into it. Many vessels are engaged in carrying freight between the Caspian ports.

The Caspian and Aral seas were once much wider than at present. The Aral sea then had an outlet to the Caspian. For some reason the climate became drier, the seas shrank away, leaving salty plains that yield only coarse grasses. The irrigated lands nearer the mountains yield large crops of grain and grass. The purple tint on the maps of pages 147 and 161 shows what part of the plain round the Caspian sea is below sea level.

Steppes of Siberia

Topics: — Northern plain of Eurasia; lake Baikal; tundras; woolly elephants; forest plains; Siberian railroad; rivers of Siberia as waterways; steppes; nomads; Caspian and Aral seas; lands below sea level.

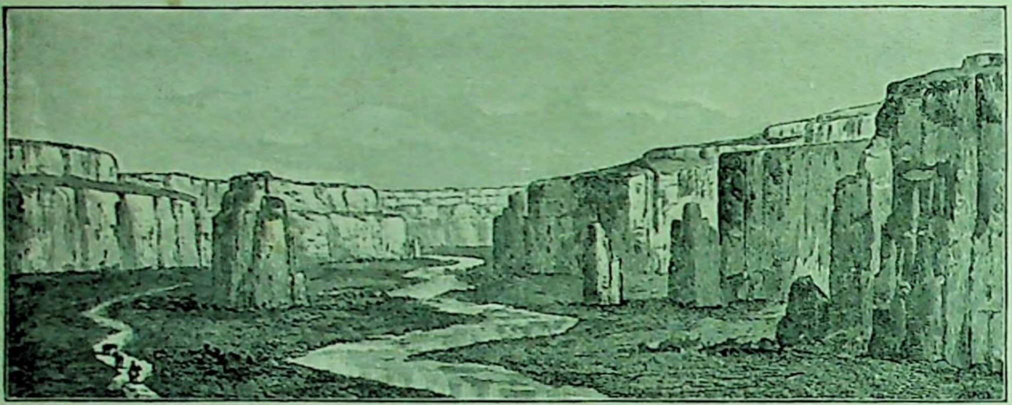
108. Pacific Slope

From Bering strait to the Amur basin the Pacific slope of Asia is very narrow and therefore has no large streams. The Amur basin is so far from the equator that the winters are long and severe. The region is thinly settled and is largely overgrown with forests.

Name two rivers that flow across the plain of China. Where do these rivers rise? What mountain range divides the middle parts of their basins? Where is the Nanling range?

The great plain of China is made of soil carried down by the Yellow and Yangtze rivers, mostly by the former. This delta plain contains many thousand square miles and is one of the most thickly settled regions in the world.

Above the delta plain the Yellow river flows through a district covered with deep yellowish soil. Ages ago this was brought down by the river from the inland region. The area covered by this soil is larger than that of the state of Texas and much larger than that of the lava plains of the Columbia plateau region.


Loess beds, Yellow river basin, China

In some places the yellowish soil, called, *loess*, is hundreds of feet in depth. It fills valleys, buries hills and rises far up the slopes of mountain ranges. Rivers have cut deep valleys in it; and in the sides of the valleys, at points which the streams no longer reach, *millions* of Chinese people have dug caves for homes. This soil is very fertile, and gardens cover a large part of the region.

The Yellow river has carried down countless tons of the yellowish soil and has made of it the larger part of the great delta plain of China. Each year the plain grows farther into the sea, for no ocean current strong enough to carry away the sediment sweeps past the mouth of the river. Cities in China that were once seaports are now far inland.

The delta plain of the Yellow river, like every other delta plain, slopes gently away on both sides from the muddy river which brings down the soil. Banks have been built along the river to keep it in its proper channel. Several times the water has burst through the banks and rushed in floods over the plain. Cities and towns have been swept away, and many thousand people have been drowned. The Chinese call the river *China's sorrow*, on account of the destruction and suffering it has caused.

Each overflow of the Yellow river has given it a new course across the fertile plain and a new mouth about which to deposit sediment and thus build its delta forward. In the course of centuries the river has shifted its mouth three hundred miles back and forth along the coast.

The Yellow river takes its name from the yellowish soil which discolors the water. This river performs its chief work in making delta lands, for it is of little use to steamers entering from the sea. The current in some places is very swift, and numerous bars form, not only at the mouth of the river, but also far upstream.

As the river has often changed its course, and as it is hardly navigable only a few large cities have grown up along its banks.

The Yangtze river built the southern part of the great delta plain of China. This stream forms the best waterway on the eastern slope of Asia and is open to large steamers for more than a thousand miles from the ocean. Many of the greatest cities in China have grown up on the banks of this river.

Canals extend almost the whole width of the great delta plain of China and form fine waterways. They supply water also for large tracts of land on which rice, millet, vegetables and other products are raised. A large inland trade is carried on by way of these canals and rivers.

Above the delta plain, for a long distance inland, the basins of the Yellow and Yangtze rivers are rolling or hilly. The western portions of the great basins are in the mountainous regions of Tibet.

More than two thousand years ago a high and wide wall was built along the former boundary of China, to shut out fierce Tartar tribes on the north. The wall runs for more than a thousand miles over mountains and through wide valleys. Many parts of the great wall are now crumbling to ruins. *See map on page 161.*

From the highland of Tibet long mountain ranges extend to the great peninsula of Indo-China, in southeast Asia. Swift streams flow in valleys between the ranges. The longest of these streams is the Mekong river.

The course of the Mekong is in many places broken by rapids. The river is therefore not navigable, except for about 300 miles from its mouth. The Mekong has built a fertile delta plain, but it is not nearly so large as the plain of China.

Farther west in Burma, a part of India, the Irrawaddy river has built a large delta.

Topics: — Amur river and basin; two great rivers of China; loess beds of China; delta plain of China; Yangtze river; cities of China; canals; middle and western China; great wall of China; peninsula of Indo-China; Mekong river; Irrawaddy river.

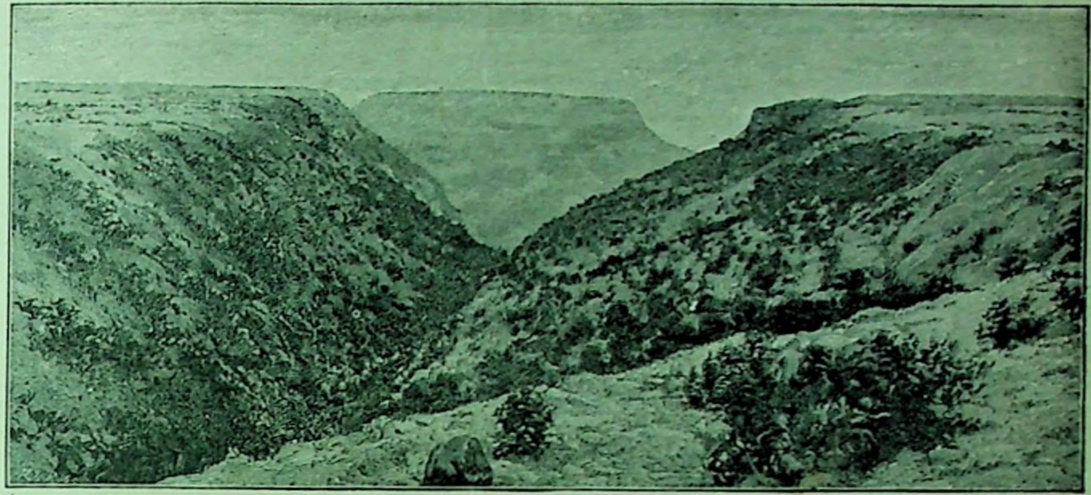
Chinese tea house

109. Surface of India

The great country of India is bordered on the north by the Himalayas. In the south is the Dekkan plateau, in the large V-shaped peninsula of Hindustan. Between the Himalayas and the Dekkan are broad plains drained chiefly by the Ganges river.

What two rivers that you have studied rise on the northern slope of the Himalayas but flow through the range and across India to the sea? Which of these rivers enters the Arabian sea? Which enters the bay of Bengal?

The Ganges river system has built very large flood plains sloping only a few inches to the mile. When the rains are heavy these plains are flooded far and wide, thus receiving fresh soil from the highland slopes. The Ganges and Brahmaputra rivers unite in making a large delta in which the streams divide, making a network of branches.


Valleys cut in the lava plains of the Dekkan peninsula

Between the flood plain of the Ganges and the mountains on the north the river basin is covered with waste washed from the lofty range. Near the mountains the coarse waste forms steep slopes, but far out in the valley the finer waste forms very gentle slopes.

The Ganges river is navigable for more than a thousand miles through its great flood plain and is alive with boats carrying products from city to city.

The Dekkan is mostly a low plateau region separated in part from the rest of India by a hilly range on the north. The peninsula has low ranges facing the two seas on the east and west.

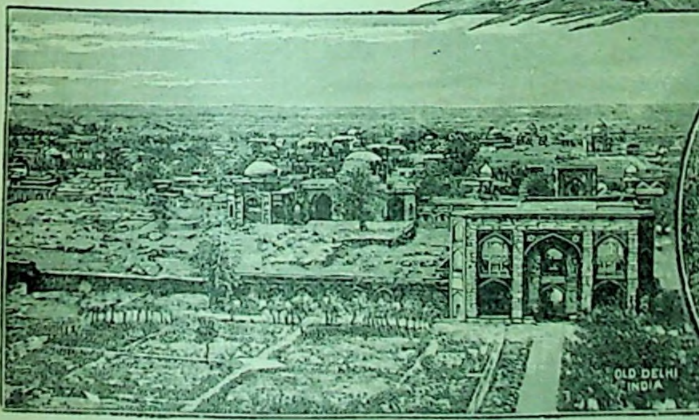
The Dekkan is highest on the west side, and its main streams therefore flow to the bay of Bengal. The western Ghats rise abruptly from a narrow coastal plain and are little more than the western edge of the Dekkan plateau. Long ages ago great quantities of molten rock poured out of the earth and covered many thousand square miles in this peninsula, just as in the basin of the Columbia river in North America; but the lava-flows of India have crumbled into fine dark soil that is very fertile.

The rivers that flow eastward in this peninsula have made flood plains and deltas of this rich soil, which for ages have yielded immense crops.

The Indus and the Brahmaputra have also made flood plains of great fertility.

Large sand bars form shoals in the bed of the Indus river. Navigation is therefore difficult, but steamers succeed in going up the river as far as a rich wheat country that spreads out from the base of the Himalayas. The Indus has made a delta, though not nearly so large as that of the Ganges.

Topics:—Peninsula of India; Ganges river; Brahmaputra river; Dekkan plateau and its lava plain; Indus river and its valley.



City built on a lake plain in India

110. Asiatic Islands

Long curving chains of islands lie east and southeast of Asia and partly inclose large border seas. These islands contain hundreds of volcanoes, many of which are now active.

The islands in the Japan group consist mainly of old volcanic hilly country, but there are also many wide plains.

The rivers of Japan, though short, are useful in floating logs of cedar and pine from the hilly districts to the sawmills near the coast. Large flat-bottomed boats on these streams also carry the produce of the plains down to the seaports.

Fujiyama, Japan

Fujiyama, a noted volcano of Japan, rises about two miles and a half above sea level; its crater is very deep. This volcano is not now active, but nearly two hundred years ago an eruption took place, sending a heavy shower of ashes far and wide over the country. The great cone was cracked and split. Many thousand people living in the region round the volcano were killed.

To the people of Japan, Fujiyama is a sacred mountain, and each year many people ascend to its crater.

Sumatra, Java, Borneo, Celebes, the Philippines and many other islands southeast of Asia are commonly known as the *East Indies* or *Malay Archipelago*.

Lesson 80 describes the Philippines.

Thousands of years ago these islands were probably connected with Asia, if we may judge from the fact that many of the same kinds of wild animals abound both on the mainland and on these border islands, but not beyond the deeper water which separates these islands from those nearer Australia. The seas around the East Indies are mostly shallow, and the very broken coast lines show that the land has in part settled beneath the sea.

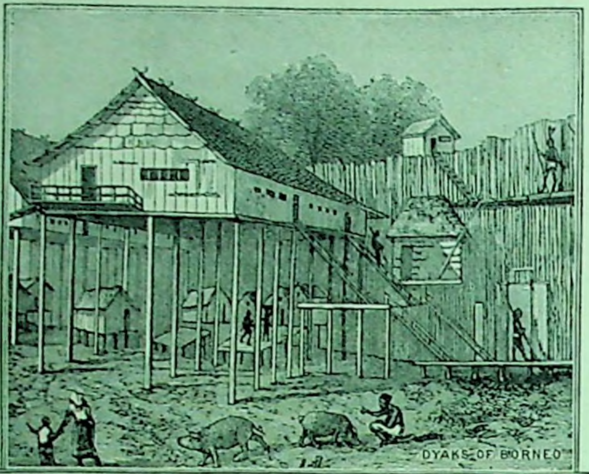
In what direction is Java from Borneo (*see map on page 187*)? From Sumatra? From Australia? From the mainland of Asia?

Sumatra, Java and other smaller islands in line with them consist mainly of the upper parts of a long volcanic range. Many of the craters are very active. The lowlands that stretch from the highland to the coast are very fertile, and many of the short rivers are building deltas in the border seas.

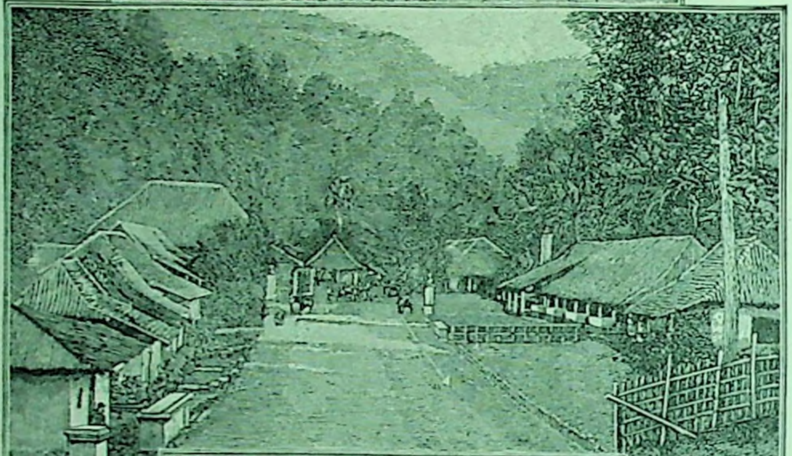
Banca and Billiton, two small islands east of Sumatra (*see map on page 187*), have very rich tin mines. Most of the tin is sent to the city of Singapore and thence to Europe. Large quantities of tin ore are found also in the Malay peninsula.

Borneo is one of the largest islands in the world. Its area is equal to nearly one tenth that of the United States, exclusive of Alaska. This great island consists mainly of a central plateau from which several ranges branch into the lowland along the coast.

Among the Malay people of Borneo are many tribes of Dyaks. These are thought to be descendants of the earliest natives. The Dyaks build houses or huts of bamboo, as shown in the picture on this page. These natives weave cloth and make iron tools.



Topics: — Japan islands; Fujiyama; great islands of East Indies; Sumatra and Java; Borneo; Dyaks.

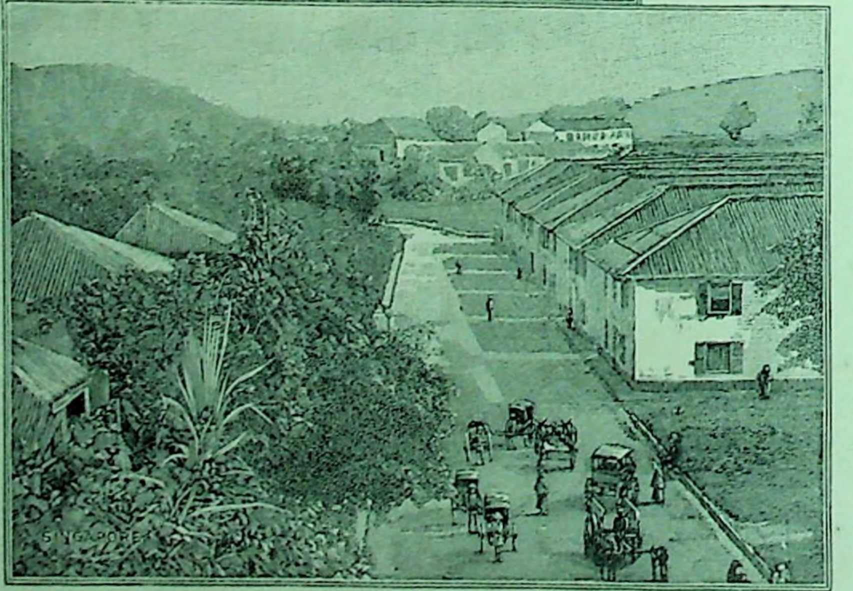


111. Climate

The three great peninsulas of southern Asia are almost wholly in the hot and warm belts. The cool belt reaches from the central highland region to the Arctic circle.

In summer, when the broad desert belt that extends across a large part of central Asia becomes intensely heated, the cool air of the trade winds bends northward towards and under the lighter heated air over the continent. The equatorial rain belt then spreads over all Asia south and southeast of the highland of Tibet and even gives heavy rainfall to a wide belt of eastern China, Korea and Japan. *See map of winds and rains of July, page 31.*

In winter, when the barren inland region of Asia is cold and the air above it heavy, the winds blow outward from the land to the sea, and the rainfall in all parts of the continent is then light.



The southern slopes of the Himalayas thus face the moist summer winds from over the Indian ocean and in that season have very heavy rainfall. This is also the rainy season in the basins of the Ganges, Brahmaputra and other streams farther east. Their dry season occurs during the northern winter, when the winds blow from the land to the sea.

To avoid the extreme summer heat of the lowlands, many Europeans living in northern India spend the hot season in the hills or low ranges along the southern border of the Himalayas.

Below the snow line of these mountains the southern slopes are covered with forests. Trees, vines, bushes and grasses form dense jungles near the foot of the range, and in these are found tigers, elephants, rhinoceroses and other huge beasts.

The plains of the Ganges basin are carefully irrigated by means of canals leading from the river. The rainfall of the summer season is thus made to serve for the entire year, even through times of drouth. India is now a part of the British empire. Before the British nation took possession of India suffering from famine was common whenever the rains came late or in small quantities. There is not so much suffering now, because the English people have improved the canals and have also built railroads which can quickly carry supplies to famine-stricken provinces.

During the wet season in the low Dekkan plateau the rain water is stored in large hollows or reservoirs; then when the dry season comes the water is led in ditches over the cultivated land.

The lower part of the Indus basin is a desert; the moist winds blowing inland over this low hot land retain their moisture till they reach the upper part of the river basin near the foot of the Himalayas. There they yield plentiful rains on the best wheat region of all India.

The winds of the Indian ocean that change direction and blow inland over southern Asia in summer and seaward in winter are called *monsoons*, meaning *season winds*. Soon after the winds change their direction they cause the ocean current under them to turn back and flow in the same direction with them.

A large part of the plain of Siberia lies within the Arctic circle and is cold and desolate. The part of this plain reaching from the Arctic circle to the Altai mountains is also far from the equator and far inland from the warmer ocean. The region therefore has long and very cold winters. The summers are short, being cool in the northern part of the plain but warm in the southern part. We have seen that the climate round the Caspian sea is dry.

The East Indies are in the torrid zone and are well supplied with rainfall.

Topics: — Heat belts of Asia; cause of bending of trade winds; countries reached by equatorial rain belt; rainy season in India and peninsula of Indo-China; life in southern slopes of Himalayas; irrigation in Ganges basin; irrigation in Dekkan plateau; basin of the Indus; monsoons; climate of Siberia; of East Indies.

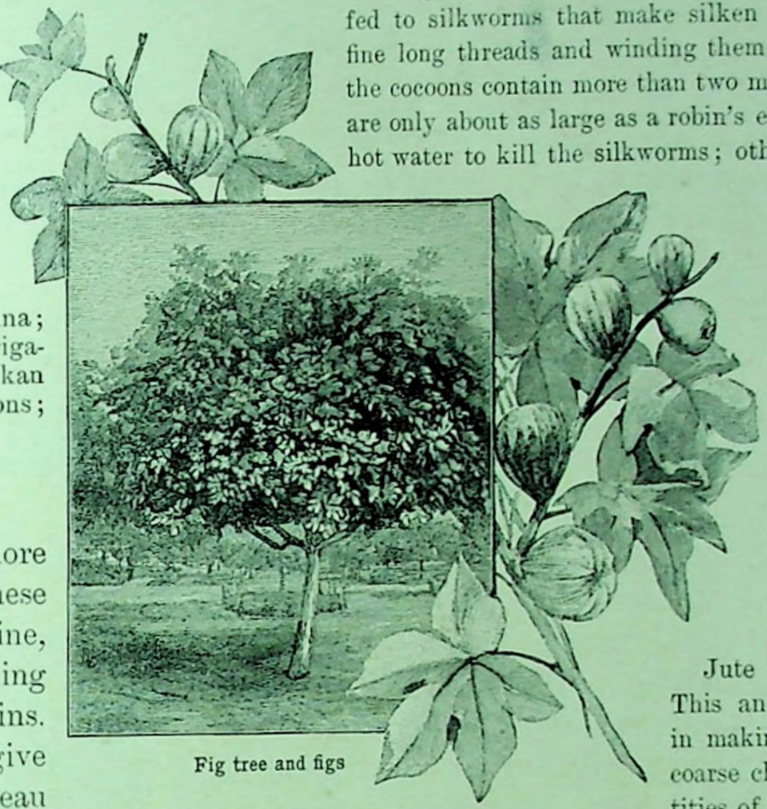


Fig tree and figs

112. Plant Life

The cold belt along the Arctic shore is a region of frozen tundras. These merge into the great forests of pine, fir and other soft-wood trees, reaching southward into the Altai mountains. Still farther south the forests give place to the inland and plateau regions, which, as a whole, are little better than deserts.

On the east of this highland the slopes of China and the Japan islands produce immense quantities of tea, rice and mulberry trees, the leaves of the latter being the food of silkworms.

On the south of the great highland the river valleys of the large peninsulas in the warm and the hot belts yield cotton, rice, sugar cane, wheat and almost countless tropical products of other kinds. Still farther south and southeast the island of Ceylon and the East Indies, or Malay Archipelago, supply a large portion of the tea, coffee, rice and spices used in the world.

On the west of the great Asian highland the small river valleys among the low plateaus produce dates, figs and other fruits, while the southern part of the Red sea coast is a famous coffee region.

Tell what you can about tea.

Tea farms are widespread through Japan, eastern China, the countries in the great peninsula of southeast Asia, India, Ceylon and the Malay Archipelago. Tea is one of the most important articles of commerce from the cities of these districts.

Japanese girls feeding silkworms

Rice is a leading food crop in the delta lands and in the moist river valleys of the same great districts named for tea culture. To the people of east and southeast Asia and the Malay Archipelago rice and other grain, called *millet*, are the staple articles of food for hundreds of millions of people. Some of the richest wheat lands in the world are in India.

The mulberry tree thrives in Japan, China, India and other warm or hot lands of east and southeast Asia, and a very important industry in these districts is thus made possible. The leaves are fed to silkworms that make silken cases, or *cocoons*, by spinning fine long threads and winding them about their bodies. Some of the cocoons contain more than two miles of silky fiber, and yet they are only about as large as a robin's egg. The cocoons are put into hot water to kill the silkworms; otherwise the worms would gnaw their way out, spoil the cocoons and fly away as moths. The fiber is unwound from the cocoon and is made into thread or cloth.[1]

India is one of the leading countries of the world in the production and export of cotton. The people in this hot land wear a great deal of cotton cloth. Some of the large cities of India have mills for making the common kinds of cotton cloth used by the natives.

Jute is an important crop in India. This and other fiber plants are used in making bagging, matting and other coarse cloth and rope. Immense quantities of sugar are raised here.

One of the crops of India is the poppy plant from which the drug known as opium is obtained. From the juice of the poppy bud many kinds of drugs and medicines are made. The juice oozes from small slits cut in the buds.

What have you learned about bamboo? This coarse grasslike plant thrives in nearly all parts of east and southeast Asia and the East Indies.

Cinnamon, pepper, cloves, nutmegs and other spices are shipped in great quantities from India, Sumatra, Java, the Celebes and other islands of the East Indies. Tell what you can about each of these spices. Java sends large quantities of coffee to Europe and some to the United States.

The island of Ceylon, near the southeast coast of India, is very fertile and yields about the same kinds of products as the adjacent mainland. Large quantities of tea, coffee, cinchona and cinnamon bark are exported from this island. What medicine is made from cinchona?

The *teak* tree abounds in India and in the large peninsula farther east. When the wood of the teak has been thoroughly dried it will not shrink, warp nor crack, even under the tropical sun. This wood is very strong, is easily carved and takes a fine polish. These qualities make it very valuable, especially for furniture and for finishing the inside of houses.

The useful dye-plant called *indigo* is common in tropical India and is an important article of export.

What does lesson 16 tell about the products of southwest Asia?

Topics: — Location of frozen tundras; of forest belt; of desert regions in Asia; China and Japan; India and peninsula of Indo-China; Ceylon and East Indies; southwest Asia; tea regions; rice and millet; silkworms; cotton; Manila hemp; jute; sugar; poppy; spices; teak; indigo.

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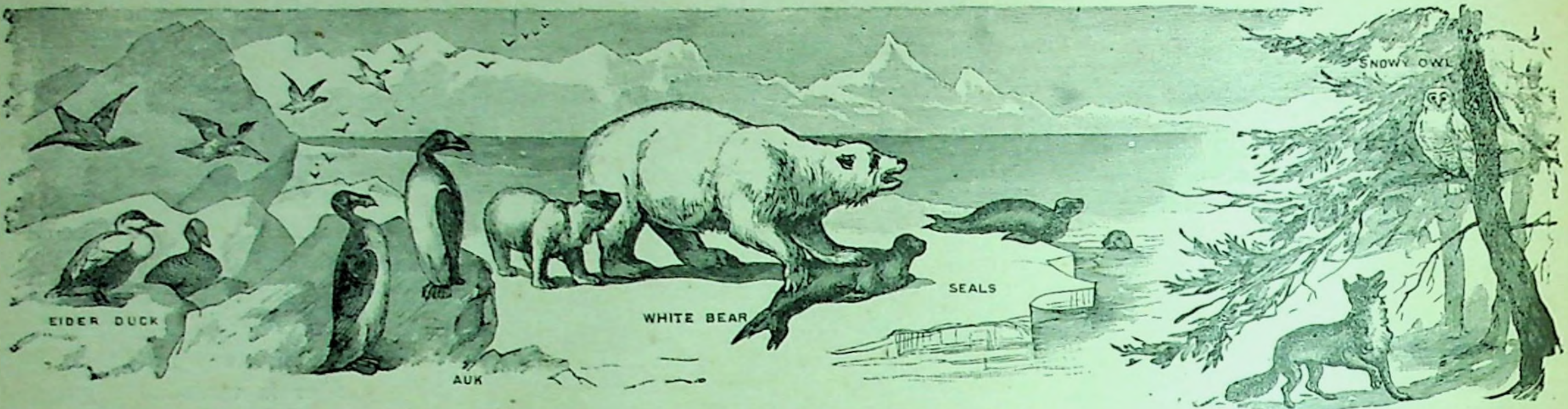
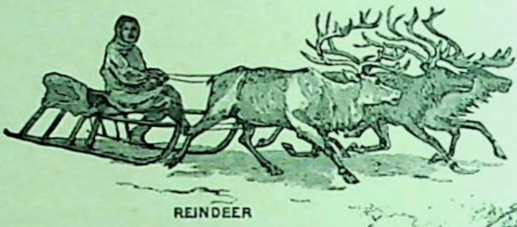
[1] The eggs of the silkworm were first carried from China to Europe about 550 A.D., but silk making is now one of the most important industries of southern Europe.



113. Animals of Northern Asia and Europe



The animals of Europe and northern Asia, as well as the part of Africa north of the Sahara, do not differ very much from those of North America. In fact, these regions together are often called the *Northern realm* of animal life.

The grassy slopes of Europe and northern Asia, like those of the other parts of the temperate zone, feed great numbers of cattle, sheep, horses and hogs, and all these afford occupations for millions of people. Here are found also many domestic fowl.

In the colder plains of the north the tribes of yellow people keep large herds of reindeer. Many wild deer also visit the tundras in summer to feed on reindeer moss. As the winter comes on they go southward, where they can find leaves and tender branches.

The reindeer is to the people of the far north what cattle are to the people of our country, or what camels are to the people of great deserts, or what zebus are to the people of India.

The hoofs of the reindeer are very wide and are well suited for travel over snow fields. This animal is very swift and can draw heavy loads. The milk and flesh of reindeer are used for food. Warm clothing is made from the skins. On the bleak northern plains of Eurasia many a man's wealth is counted in reindeer.

In the summer the deer feed on shoots and leaves of shrubs and trees, but often in winter those that remain in the snowy plains must scrape through the snow to find reindeer moss.

Many elks, in the same great family as the moose of North America, live in the forests of the northern plains of Eurasia.

In the forests and cold plains of northern Eurasia are found countless fur-bearing animals, such as the beaver, otter, sable and ermine. The hunting of animals for furs is an important occupation of many of the yellow people and white settlers in this cold part of the earth.

In the mountains of southern Europe are found the graceful chamois and the ibex.

The chamois and the ibex feed on high grassy slopes. They are very shy and often escape from hunters by leaping across wide chasms or down steep rocky slopes.

The useful yak is found in the great highland of central Asia.

The yak is of great service to the people of the highlands. It carries heavy burdens and supplies milk, meat and warm skins. Wild yaks sometimes live at a great height. They have been seen in the mountains nearly four miles above the level of the sea. *See picture on page 20.*

The grassy portions of the desert plains near the northern side of the central highland of Asia are the home of the two-humped camel. To the people of this dry region this animal is as useful as the one-humped camel is to the people of northern Africa.

The shore waters, the streams and the great arms of the sea round Eurasia abound in food fish and afford employment to thousands of people.

Topics: — Domestic animals of Eurasia; reindeer; elk; fur-bearing animals; chamois and ibex; yak; two-humped camel; food fish.

114. Animals of Southeast Asia and the East Indies

India, Indo-China and the Malay Archipelago are sometimes called the *Oriental region*. The word *Orient* means *East*.

Mountains rise as a barrier between the two animal regions in Asia; moreover, the climate north of the highland is much colder than that on the southern slope.

A very large ape, called the *orang-outang*, lives on the large islands southeast of Asia.

Apes of this species, as well as the gorilla of Africa, weave rude nests among branches and are rarely seen on the ground. Their food consists of fruits and leaves.

The most useful animals of the Orient are the zebu and buffalo. They are found in nearly all parts of southeast Asia and on the islands of this region; they have also spread westward into parts of Africa.

Zebus are a kind of cattle having great humps on their shoulders. Some of these animals are used for riding, and they can travel all day at the rate of five or six miles an hour. Zebus are also used for plowing, drawing carts and doing other kinds of work.

The true buffalo of southeast Asia is often found in a wild state. Tame buffaloes are useful as beasts of burden. These animals have very wide hoofs and are well suited to work on soft or marshy ground. Many buffaloes are now used as dráft animals in parts of southern Europe as well as Asia.

There are wild elephants in the jungles or forests of this region, and tame elephants in the villages.

Many of these huge beasts have been trained to work, but the cost of feeding them is so great that their places are, to a large extent, being taken by horses.

The catlike tiger is a native of Asia. It is very strong, and as its food consists of small animals it is found in many parts of the continent.

The one-horned rhinoceros belongs in the swamps and jungles in this hot part of the earth.

This huge beast sleeps during the day and comes from its haunts in the evening to browse on shrubs, leaves and grass.

Large crocodiles, called *gavials*, infest the Ganges delta and the lower parts of many streams in this region.

Topics: — Lands in Oriental region; large ape of Orient; zebu; buffalo; elephant; tiger; rhinoceros; gavial.

115. People

Review lessons 26, 27 and 28 and tell which part of Asia and the border islands are the home of the brown race; of the yellow race; of the white race.

The brown people of Java, Sumatra and parts of the other islands of the East Indies till the soil, raise herds of buffaloes and other domestic animals, manufacture cloth and metal goods, build cities and carry on commerce with foreign nations. Many of these people are very intelligent and well educated. In parts of the East Indies, however, especially remote from the coast, the brown people are little better than savages.

For an account of the brown people of the Philippine islands, see lesson 80.

Sumatra, Java, south and east Borneo, Celebes, the western half of New Guinea and many of the smaller islands southeast of Asia belong to Holland, or the Netherlands.

England controls the part of Borneo that does not belong to the Dutch people. *See map.*

The plateau of Tibet, the Middle Basin and Gobi regions, the Altai highland, parts of the plain of Siberia, the entire Pacific slope of Asia from Bering strait to the Malay peninsula, as well as the island of Japan, are the home of the yellow race in Asia. The principal countries of the yellow people are Japan, China, Anam and Siam.

Emperor's palace, Japan

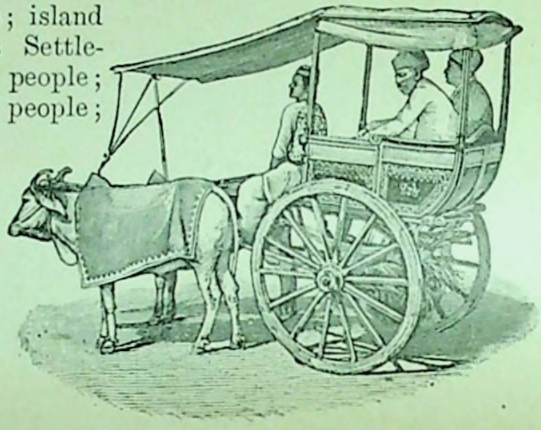
The principal home of the white race in Asia is in India, Afghanistan, Baluchistan, and the countries of southwest Asia. Many white people from Russia have moved eastward into Siberia and have built large cities along the old trade route which is now followed by the railroad.

In general we may say that the people living on the Arctic and Pacific slopes of Asia belong to the yellow race; that those living on the slopes that face the Indian ocean belong to the white race; that the people of the Malay Archipelago belong to the brown race. It should be kept in mind, however, that people of various races have settled in parts of these regions.

Topics: — People of the East Indies; island possessions of Holland; tin; Straits Settlements; lands forming home of yellow people; principal countries settled by yellow people; countries of Asia settled by white people; general distribution of races in Asia.

116. Countries and Cities of Asia

China. China is a republic and contains about one fourth of the human race. The British nation controls the greater part of China's foreign trade, though the United States has a considerable share in it.



Cart drawn by zebus, India

The island of **Hongkong**, on the coast of China, is a British colony. It exports Chinese tea and silk, and imports opium, cotton cloth, sugar and flour for the great republic near by.

A Hindu

The United States imports tea and silk from China, — chiefly from the ports of **Shanghai**, **Canton** and **Foochow**.

Peking, the capital, and Canton are the largest cities of the Chinese republic. **Yarkand** is in the principal oasis of the region of Eastern Turkestan. **Lassa** is the chief city of Tibet.

In recent years the chief trading nations of Europe have tried to gain control of various parts of China, and some of them hold small portions of the country and claim the right to "exercise influence in trade" over still larger areas. It is impossible at present to foresee the result of this attempt to divide the great country. What does lesson 27 tell about the Chinese?

Japan. The Japanese islands are but little larger than California. On these islands live more than half as many people as are in the United States. Japan is an important manufacturing country. It exports silk, cotton yarn and tea. The imports are mostly raw cotton, wool, oil cake, petroleum and sugar. The trade is chiefly with the United States and Great Britain.

Japan is the most progressive of Asiatic countries. The Japanese have good schools, railway and telegraph lines and large manufactories. Among the latter are iron foundries, glass works, paper mills, cotton and silk mills. What does lesson 27 tell about the Japanese?

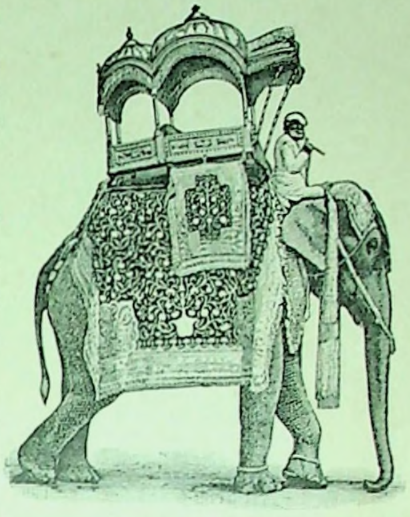
Tokyo is the capital and the commercial center of Japan. Only two cities in America are larger than Tokyo.

Yokohama, on the bay of Tokyo, and **Kobe** are the chief seaports. **Osaka** is an important manufacturing city. **Kyoto** is surrounded by a great number of Buddhist temples.

Korea, also called Chosen, belongs to the empire of Japan. The foreign trade of this peninsula is small and is mostly in the hands of the Japanese. **Seoul** is the chief city of Korea.

French Indo-China. French Indo-China includes Anam, Cochin China, Cambodia, Tonkin and other provinces. All these are under the control of France.

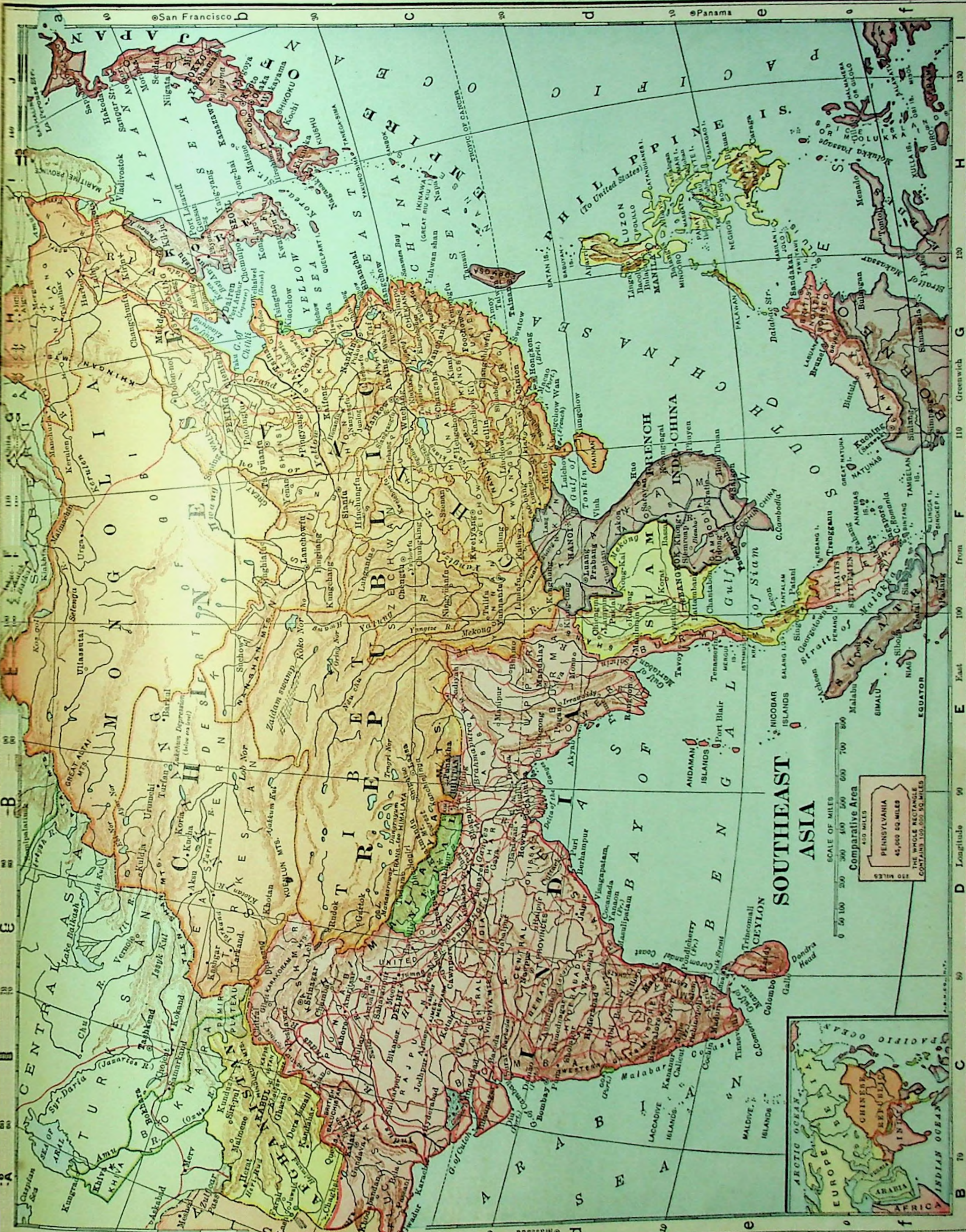
The products of French Indo-China are similar to those of British India. **Hanoi, Hue, Saigon** and **Pnompenh** are the chief centers of trade.



State elephant, India

Siam. This country is ruled by a native king, who is educated and progressive. The resources are poorly developed. Teak and rice are the principal products. **Bangkok** is the chief city.

East Indies, or Malay Archipelago. Sumatra, Java, Celebes and middle and southern Borneo are possessions of Holland. They are


SOUTHEAST ASIA
SCALE OF MILES
0 50 100 200 300 400 500 600 700 800
Comparative Area
PENNSYLVANIA
45,000 SQ. MILES
THE WHOLE RECTANGLE CONTAINS 100,000 SQ. MILES
Longitude East from Greenwich
EQUATOR
TROPIC OF CANCER
CHINESE REPUBLIC
MONGOLIA
TIBET
CHINESE TURKESTAN
INDIA
BURMA
SIAM
FRENCH INDO-CHINA
JAPAN
KOREA
PHILIPPINE IS.
BORNEO
SUMATRA
AFGHANISTAN
BALUCHISTAN
PERSIA
CENTRAL ASIA
SIBERIA
SEA OF JAPAN
YELLOW SEA
EAST CHINA SEA
SOUTH CHINA SEA
PACIFIC OCEAN
BAY OF BENGAL
ARABIAN SEA
Gulf of Siam
Gulf of Tonkin
Strait of Malakka
CEYLON
ANDAMAN ISLANDS
NICOBAR ISLANDS
LACCADIVE ISLANDS
MALDIVE ISLANDS
PEKING
DELHI
MANILA
HANOI
BANGKOK
SEOUL
TOKYO
San Francisco
Panama
Rome
Massaua
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ARABIA
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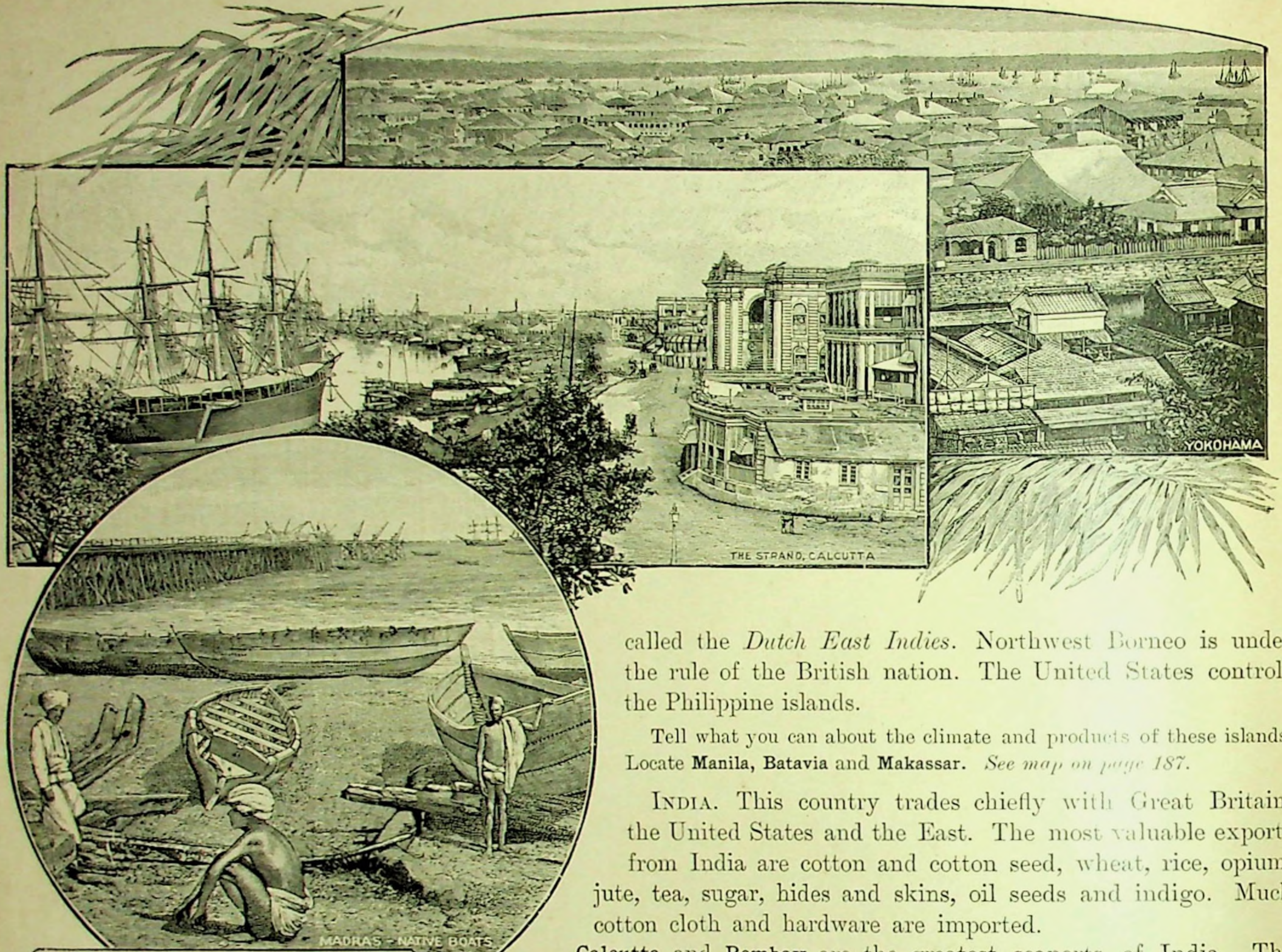
ARCTIC OCEAN
INDIAN OCEAN



YOKOHAMA

THE STRAND, CALCUTTA

MADRAS — NATIVE BOATS

called the *Dutch East Indies*. Northwest Borneo is under the rule of the British nation. The United States controls the Philippine islands.

Tell what you can about the climate and products of these islands. Locate **Manila, Batavia** and **Makassar**. *See map on page 187.*

INDIA. This country trades chiefly with Great Britain, the United States and the East. The most valuable exports from India are cotton and cotton seed, wheat, rice, opium, jute, tea, sugar, hides and skins, oil seeds and indigo. Much cotton cloth and hardware are imported.

Calcutta and **Bombay** are the greatest seaports of India. The former is not as large as Philadelphia. Calcutta is on the Hugli river, in the Ganges delta. This city is the principal shipping point for the produce of the Ganges and the Brahmaputra basins. Railroads, rivers and canals form the inland highways of trade to and from this great port. Bombay is reached by railroads from nearly all parts of India. It owes its growth largely to its situation, being much nearer than Calcutta to the Suez canal and the British Isles.

Madras is the largest seaport of southern India. **Benares** is the chief seat of the Hindu religion and is one of the oldest cities in the world. In this holy city of the Hindus the bank of the Ganges is lined with great temples.

Rangoon is the port of Burmese India. This city has a large trade in rice.

Delhi, the capital of India, and **Mandalay** are trade centers. *Picture, page 167.*

BALUCHISTAN is a rugged country under the control of the British. Many of the people are shepherds.

Locate Colombo and Singapore. What have you learned about the latter city? *See lesson 110.* Ceylon and the Straits Settlements, as well as India, are British possessions,[1] but various parts of India have native rulers subject to the *viceroy*, or British ruler.

COTTON GREEN, BOMBAY

AFGHANISTAN. This country is crossed by caravan routes that lead into India. **Kabul** is the chief city.

RUSSIA IN ASIA. Siberia and Trans-Caucasia[2] are parts of greater Russia, which comprises nearly one seventh of the land surface of the earth. Bokhara and Khiva are ancient kingdoms of central Asia.

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[1] France and Portugal control a few small colonies in the southern and western parts of the Dekkan.

[2] In the Caucasus region are the two new republics of Azerbaijan and Georgia.

Tashkend, the largest city in central Asia, is in a district made fertile by irrigation. **Tiflis** is a city through which Russia has a large trade with Persia and other countries of Asia. The railroad which carries quantities of petroleum from **Baku** to **Batum** passes through Tiflis.

Vladivostok, the Pacific port of Siberia, and **Irkutsk** are centers of Siberian trade.

SOUTHWEST ASIA. This region includes several countries. Cereals, cotton, figs and dates, nuts and olives are raised. Wool comes from the Angora goats.

TURKEY, OR ANATOLIA. This division is surrounded on three sides by water. Most of the people are Mohammedan Turks.

ARMENIA, a mountainous region south of the Black sea, is a Christian country.

MESOPOTAMIA lies in the valleys of the Tigris and Euphrates rivers.

ARABIA contains much desert land. Fertile regions lie near the borders. Wandering tribes live in the interior. The tribes in the western part have united and proclaimed their independence. The name of their country is HEJAZ. OMAN is in southeast Arabia. Camels are bred here and dates are raised.

SYRIA AND PALESTINE lie at the eastern end of the Mediterranean sea. A valley bordered by ranges on the east and west runs through both divisions.

Smyrna is the most important port of southwest Asia. **Damascus** is one of the oldest cities of the world. **Beirut** is its port. **Jerusalem** is famous for its religious history. **Bagdad** is an important port. **Maskat** exports dates. Coffee is raised around **Mocha**. **Mekka**, the capital of Hejaz, is the birthplace of Mohammed.

PERSIA. The ruler of this country is called the *shah*. A Congress or Parliament helps to make the laws. Cereals and the opium poppy grow chiefly near the Caspian sea. Sheep are raised in the highlands. Date palms thrive, and pearls are obtained from the Persian gulf. Persian rugs are famous.

Teheran and **Tabriz** are the principal cities.

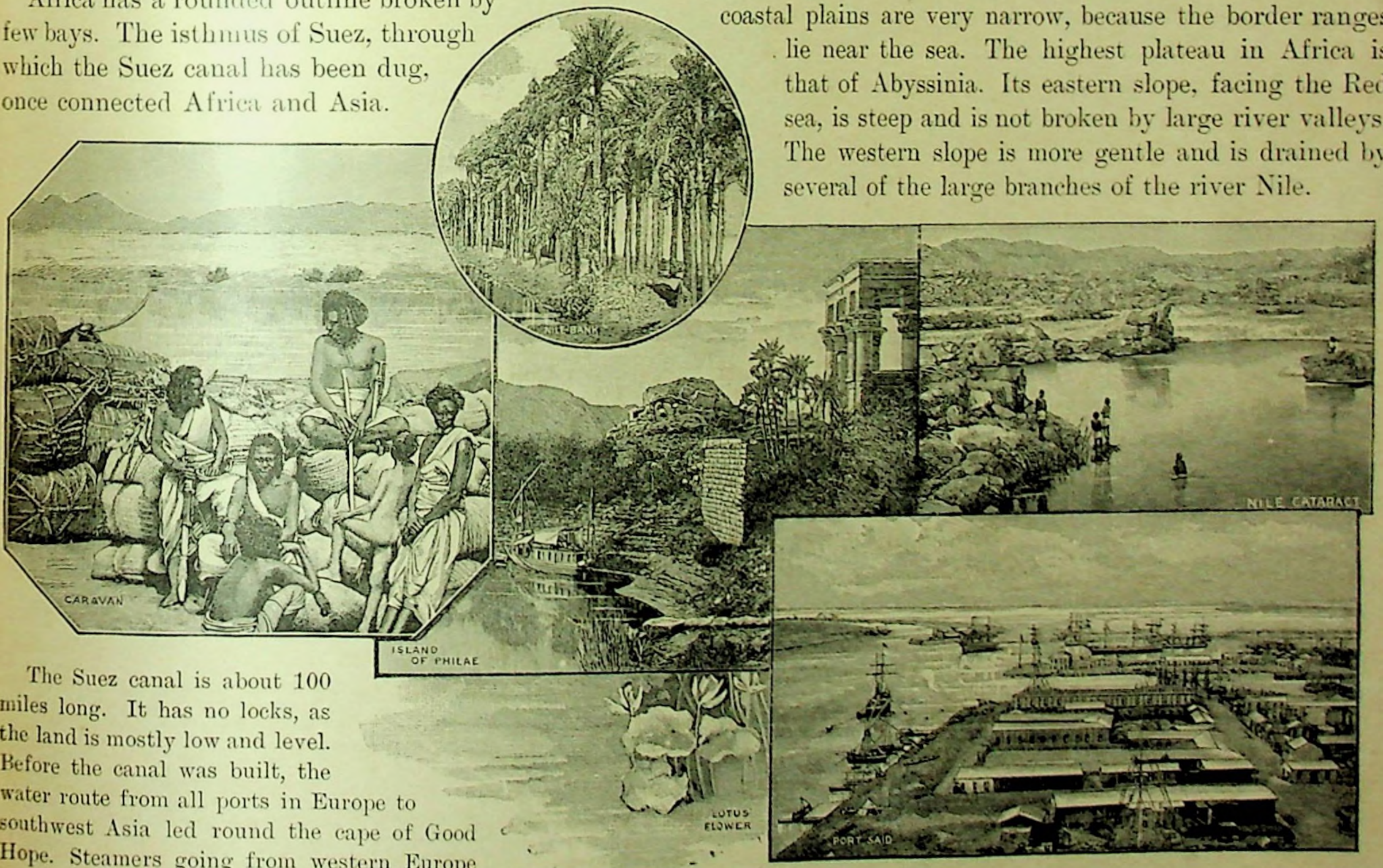
AFRICA

117. Surface of Africa

What does lesson 17 tell about the surface of Africa?

Africa has a rounded outline broken by few bays. The isthmus of Suez, through which the Suez canal has been dug, once connected Africa and Asia.

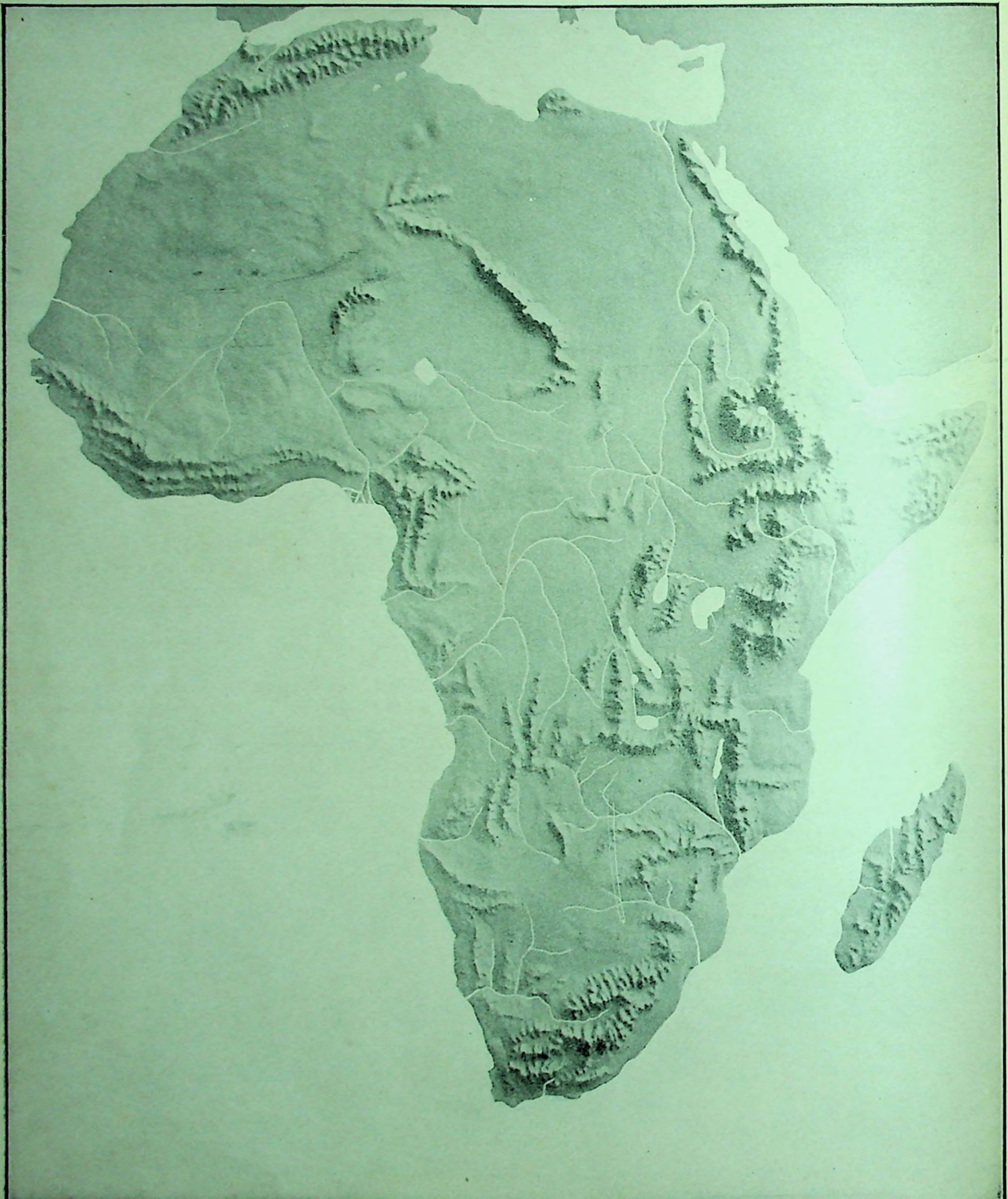
Almost the entire continent of Africa is a plateau. Its average height above sea level is double that of Europe. The highest mountains are in the east and south. The coastal plains are very narrow, because the border ranges lie near the sea. The highest plateau in Africa is that of Abyssinia. Its eastern slope, facing the Red sea, is steep and is not broken by large river valleys. The western slope is more gentle and is drained by several of the large branches of the river Nile.



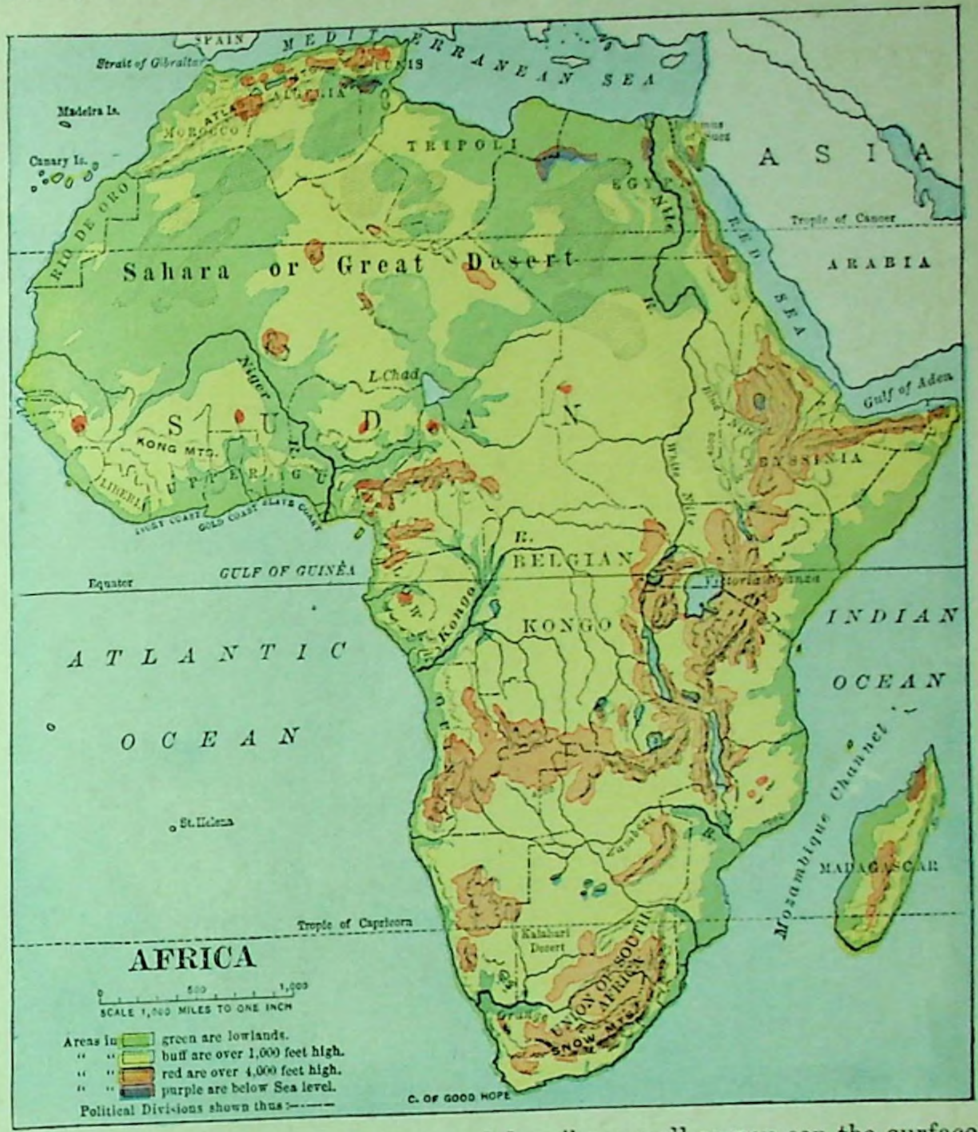
Entrance to Suez canal

The Suez canal is about 100 miles long. It has no locks, as the land is mostly low and level. Before the canal was built, the water route from all ports in Europe to southwest Asia led round the cape of Good Hope. Steamers going from western Europe to India now save about 4000 miles by using the canal. Sailing vessels cannot pass through the canal without being towed at a great expense; and therefore, as a rule, they prefer the outside water route round southern Africa. Port Said is at the Mediterranean end of the Suez canal.

The Nile river rises in the lake region of middle Africa and is the only large stream flowing northward to the Mediterranean sea. The basin of the Nile is about as large as that of the Mississippi river.



RELIEF MAP OF AFRICA



The Nile flows from Victoria lake, or *Nyanza*.[1] This body of water is crossed by the equator and is about three fourths of a mile above sea level.

The Blue Nile and the Black Nile, or Atbara, are the main branches from the east. During the northern summer, when the equatorial rains reach the highland of Abyssinia, many torrents pour down these tributaries, filling the Nile with muddy water; but during the dry season the torrents dwindle away till only muddy pools or even dry channels remain.

For hundreds of miles this great river flows through the desert without a single tributary. There the river has cut a long valley and has made flood plains several miles in width. It has made also a large delta at its mouth. Every summer, after the equatorial rains have fallen in the highland of Abyssinia and in the lake region of middle Africa, the Nile overflows its flood plains and deposits a thin coating of rich soil. In flood time it pours into the sea nearly five times as much water as when the flood has gone down. At Assouan a great dam has been built to hold back some of the flood water. This is used to irrigate lands which the flooded Nile does not reach.

The Nile contains rapids or cataracts which greatly hinder navigation. Large vessels ascend the river as far as the first cataract. Caravan routes across the desert lead to the port of Assouan below this cataract. There the gums, oil, salt and ivory carried for many miles by camels are placed on boats and floated down to the large cities in the delta plain. Small vessels can be hauled over the first cataract and can then sail up to the second.

In the lower part of the Nile valley are found the greatest monuments ever built by man. These are known as the Pyramids of Egypt and are the tombs of the ancient kings. One of these pyramids is 450 feet high, and the length of each side of the square base is nearly one seventh of a mile. The pyramids are made of huge blocks of stone.

(*Continued on page 178.*)

Sphinx and pyramid, Egypt

Map Studies: — Describe the position of Africa with regard to the other continents and the oceans.

Study the relief map and describe as well as you can the surface of Africa. Compare it with South America.

Sketch the map of Africa, using the guide map in the supplement. Which of the continents that we have studied does it most closely resemble in outline? Which of the continents are smaller than Africa? *Compare maps on pages 17 to 23.*

Which part of Africa is the most mountainous? What does lesson 17 tell about the Sahara? The Nile? The Sudan region? The Kongo basin? The southern part of Africa?

Describe the course of the Nile; the Niger; the Kongo; the Zambezi; the Orange. What large lake in Africa is under the equator? What river flows from this lake? What river receives a tributary from lake Tanganyika? Where is lake Chad?

Locate the highlands of Abyssinia; the Snow mountains; the Atlas mountains.

What tropic crosses the Kalahari desert? The Sahara? What great river basin in Africa is crossed by the equator? What large river basin in South America is in about the same latitude?

Where is the isthmus of Suez? What sea is between Europe and Africa? Between Africa and Asia? Locate Madagascar; the Canary islands; the Madeira islands; St. Helena; Mozambique channel; the cape of Good Hope.

In which zone is the greater part of Africa? Name some of the principal plant products of this zone. Can you name some of the large wild animals of Africa?

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[1] *Nyanza* means *lake.*

The *sphinx*, shown in the same picture with the pyramids, is a curious monument nearly 200 feet long and mostly carved from a ledge. It shows a man's head on a lion's body.

What have you read about the great desert in northern Africa? *See lesson 17.*

The Sahara, though as large as the United States, supports only about one fortieth as many people. Most of these live near the fertile places, or oases, where there are wells or natural springs.

A few low mountain ranges rise in the desert. Rain occasionally falls on these ranges, and small streams then flow into the desert lands. During the winter months some of the highest peaks in the desert are capped with snow.

In the middle and eastern parts of the desert the surface consists largely of stony flat-topped hills or tablelands. Some of these are a mile high. They are swept by hot, dry winds, which blow away the dust from their stony or gravelly surfaces.

The western part of the desert of Sahara is mainly a great sandy region in which countless dunes or sand hills form. Some of these are more than 600 feet high.

The Sahara is part of a great belt of arid regions that cross Arabia, part of Persia and extend to the Gobi desert. A wide branch of this barren belt spreads northward around the Aral and Caspian seas.

We have studied about the great mountain barrier of the Himalayas. The Sahara also forms a barrier between northern and southern Africa, and very few of the plants and animals native to the lands north of the desert are found south of the great barren region, unless the white man has taken them there.

Between the Sahara and the western part of the Mediterranean sea rise the Atlas mountains.

Small streams from the Atlas mountains flow into the border of the desert, and even after they dwindle away their ground water supplies many wells that have been sunk in that dry region. The water from these wells is used for irrigating groves of date palms. Thousands of wells have been sunk along the borders of the desert south of the Atlas range. In the next lesson we shall learn why the northern slopes of this range are more fertile.

What does lesson 17 tell about the Sudan?

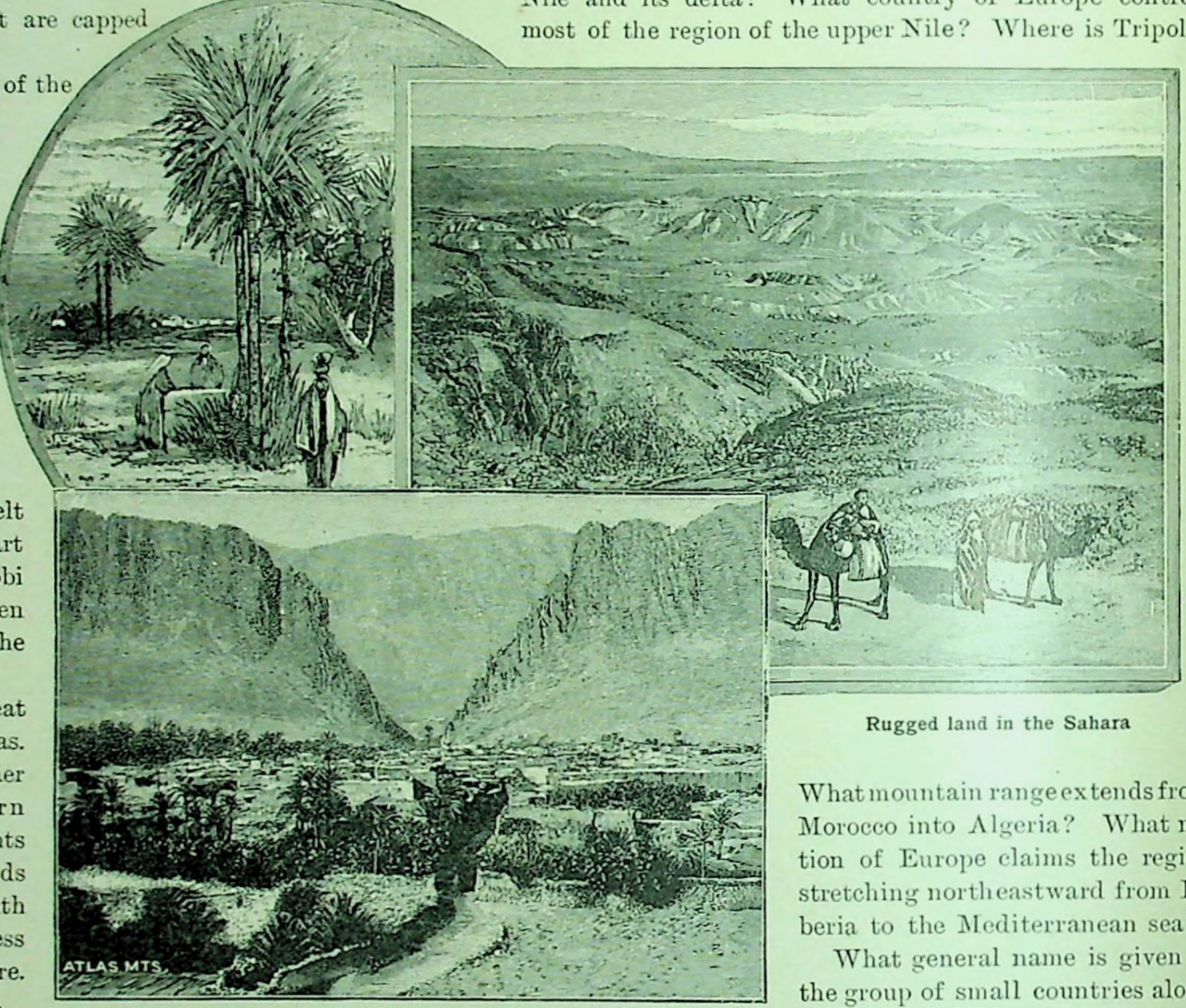
The Sudan extends from the Atlantic coast to the highlands of Abyssinia. Eastern Sudan is in the Nile basin, western Sudan mostly in the Niger basin and central Sudan in the basin of lake Chad.

Southward from the Sahara the country changes gradually from a desert into grassy lands and finally into forest areas.

The main stream that feeds lake Chad flows from the rainy forest country far in the southeast. Very little is known about the region in which this stream rises. Lake Chad is in the largest basin of inland drainage in Africa; the lake is shallow and its banks are low. As the season changes from wet to dry, the lake varies greatly in size. At times it becomes larger than lake Superior and then shrinks to about one fourth its size, leaving thousands of square miles of swamps along its borders. When swollen by rains this lake overflows in a channel, or *wady*, that leads into the desert. This overflow keeps the lake almost fresh.

(*Continued on page 180.*)

Map Studies: — In what country is the lower part of the river Nile and its delta? What country of Europe controls most of the region of the upper Nile? Where is Tripoli?



Rugged land in the Sahara

Arab city near a pass in the Atlas mountains

What mountain range extends from Morocco into Algeria? What nation of Europe claims the region stretching northeastward from Liberia to the Mediterranean sea?

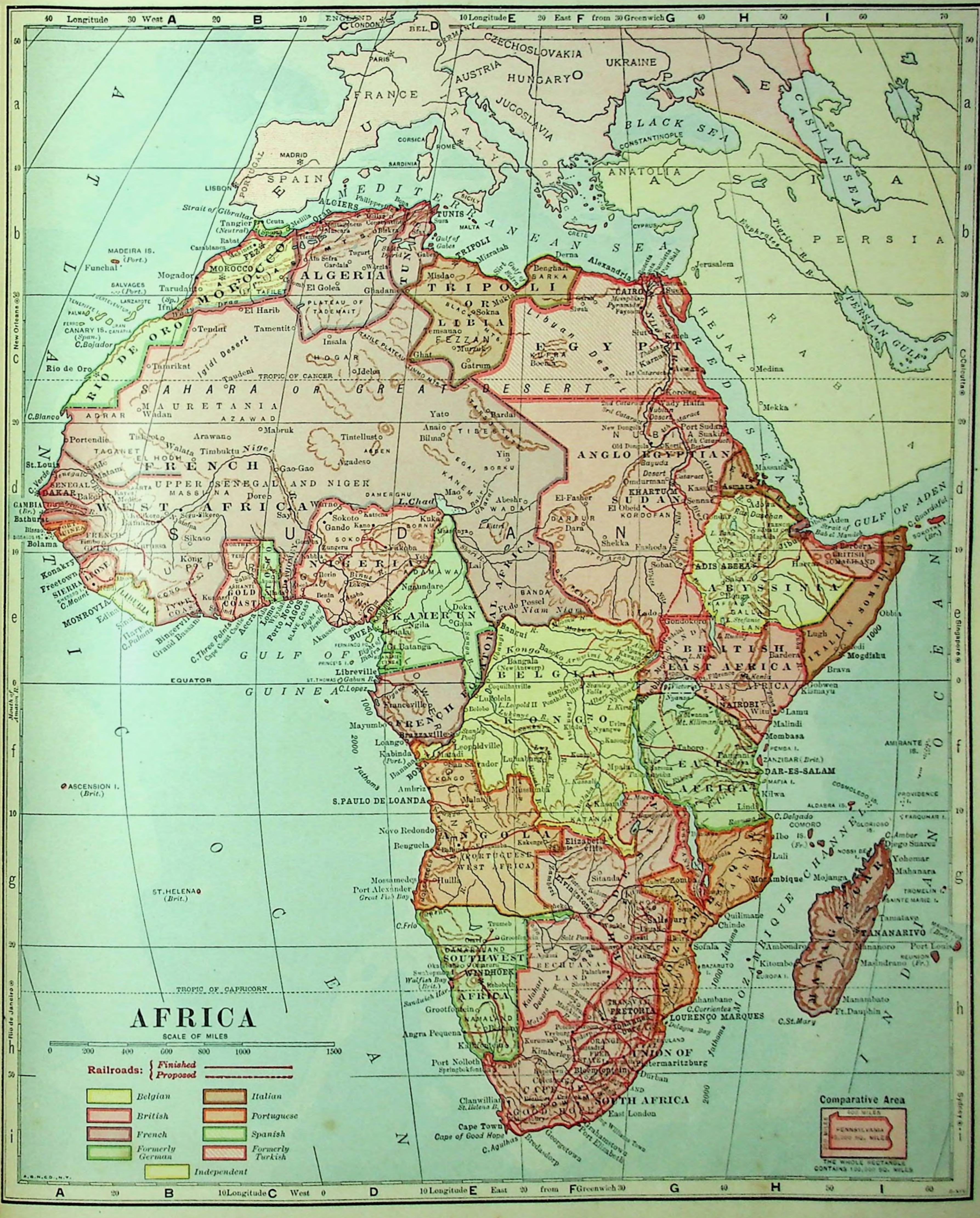
What general name is given to the group of small countries along the north coast of the gulf of Guinea? Along the east coast of the same gulf? Where are the Ivory coast, the Gold coast and the Slave coast?

What European colony comprises the greater part of the Kongo basin? What nation claims the region on the north of lake Victoria? On the south? *See footnote 1, page 177.*

What nation of Europe claims a strip of land from lakes Tanganyika and Nyassa to the Union of South Africa? What two river basins are partly in this region? What part of Africa is known as the Union of South Africa? What mountain range extends across Cape of Good Hope? What tropic crosses the Transvaal?

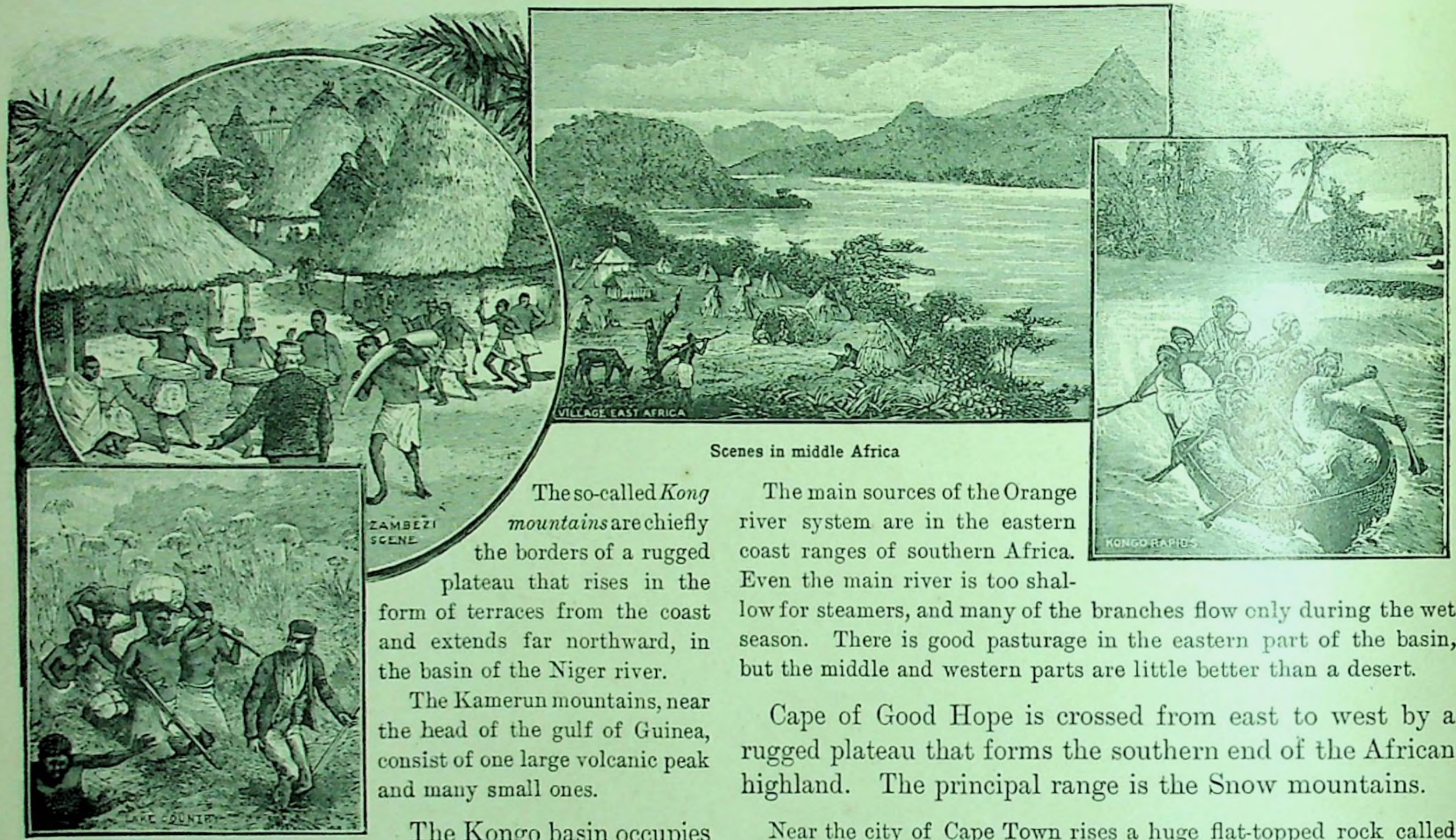
In general, in what parts of Africa are the French claims (*see map*)? The English claims? The Portuguese claims? The Spanish claims? The Belgian claims?

Review what lesson 24 says about the people of Africa; also lesson 28. What does lesson 29 tell about the religions of the black race in middle Africa and the white race in northern Africa? What does lesson 30 tell about the governments in Africa?


AFRICA
SCALE OF MILES
0
200
400
600
800
1000
1500
Railroads: Finished
Proposed
Belgian
British
French
Formerly German
Italian
Portuguese
Spanish
Formerly Turkish
Independent
Comparative Area
400 MILES
PENNSYLVANIA
45,000 SQ. MILES
THE WHOLE RECTANGLE CONTAINS 100,000 SQ. MILES
A.B.N.CO., N.Y.
Longitude
West
East
from Greenwich
TROPIC OF CANCER
EQUATOR
TROPIC OF CAPRICORN
ATLANTIC OCEAN
INDIAN OCEAN
MEDITERRANEAN SEA
BLACK SEA
CASPIAN SEA
RED SEA
PERSIAN GULF
GULF OF ADEN
GULF OF GUINEA
MOZAMBIQUE CHANNEL
EUROPE
ASIA
ARABIA
PERSIA
ANATOLIA
HEJAZ
ENGLAND
LONDON
PARIS
FRANCE
BEL.
GERMANY
CZECHOSLOVAKIA
AUSTRIA
HUNGARY
UKRAINE
JUGOSLAVIA
ITALY
ROME
CORSICA
SARDINIA
SICILY
MALTA
CRETE
CYPRUS
GREECE
CONSTANTINOPLE
SPAIN
MADRID
PORTUGAL
LISBON
Strait of Gibraltar
Tangier (Neutral)
MOROCCO
FEZ
ALGERIA
ALGIERS
TUNIS
TRIPOLI OR LIBIA
FEZZAN
BARKA
EGYPT
CAIRO
Alexandria
Jerusalem
Libyan Desert
SAHARA OR GREAT DESERT
RIO DE ORO
MADEIRA IS. (Port.)
CANARY IS. (Span.)
FRENCH WEST AFRICA
UPPER SENEGAL AND NIGER
SUDAN
ANGLO EGYPTIAN SUDAN
KHARTUM
NUBIA
ABYSSINIA
ADIS ABEBA
ERITREA
Asmara
BRITISH SOMALILAND
ITALIAN SOMALILAND
Mogdishu
BRITISH EAST AFRICA
NAIROBI
Mombasa
ZANZIBAR (Brit.)
DAR-ES-SALAM
EAST AFRICA
L. Chad
NIGERIA
GOLD COAST
LIBERIA
MONROVIA
SIERRA LEONE
Freetown
DAKAR
GAMBIA (Br.)
Bathurst
KAMERUN
FRENCH EQUATORIAL AFRICA
Libreville
Brazzaville
BELGIAN KONGO
Leopoldville
ANGOLA (PORTUGUESE WEST AFRICA)
S.PAULO DE LOANDA
SOUTHWEST AFRICA
WINDHOEK
BECHUANALAND
RHODESIA
Salisbury
MOZAMBIQUE
LOURENÇO MARQUES
PRETORIA
UNION OF SOUTH AFRICA
Cape Town
Cape of Good Hope
Durban
Kimberley
Bloemfontein
MADAGASCAR
TANANARIVO
ASCENSION I. (Brit.)
ST. HELENA (Brit.)
Mekka
Medina
Aden
Jibuti
C. Guardafui
SOKOTRA (Br.)
New Orleans
Calcutta
Singapore
Rio de Janeiro
Sydney

The Niger basin is thought to be about three fourths as large as that of the Mississippi. It rises on the north side of the Kong mountains, makes a great bend northward, flows for several hundred miles in the Sahara desert, then turns southward and enters the sea through the largest delta in Africa.

The greater part of this delta is covered with forests and coarse grass. Small steamers from the sea can go a few hundred miles up the Niger before their progress is stopped by rapids; but the steamers can ascend the Binue branch to a point about 600 miles from the sea. No other river in tropical Africa is navigable for so great a distance inland from the coast.



Scenes in middle Africa

The so-called *Kong mountains* are chiefly the borders of a rugged plateau that rises in the form of terraces from the coast and extends far northward, in the basin of the Niger river.

The Kamerun mountains, near the head of the gulf of Guinea, consist of one large volcanic peak and many small ones.

The Kongo basin occupies the greater part of middle Africa and lies west and southwest of the upper Nile basin. Almost all the Kongo basin is a plateau with a general slope westward. The average height of the region above sea level is about half a mile.

The Kongo, like the Nile, rises in the lake region of middle Africa. One branch of the Kongo forms the outlet of lake Tanganyika. Other branches flow from smaller lakes farther south.

East of the lake region rise two volcanic peaks, Mts. Kenia and Kilimanjaro, the highest mountains in Africa, though they are not quite so high as Mt. McKinley.

There are rapids and falls in the Kongo river at the place where it descends from the plateau to the narrow coastal plain. These falls prevent vessels from going far inland from the sea, but small steamers have been carried overland past the falls and now navigate the upper river, where they find an open waterway for thousands of miles along the great trunk stream and its branches.

South of the Kongo are the basins of the Zambezi and Orange rivers.

In the Zambezi basin are found the same changes from forest to grass land and then to desert as in Sudan. The northern part of this basin has forests, but the southern part reaches the Kalahari desert. The Zambezi is the largest African river flowing into the Indian ocean. This stream is thought to drain an area equal to about two thirds that of the Mississippi basin.

Locate the Victoria falls. These falls mark the place where the river leaves the great inland plateau. At the falls the Zambezi is a mile wide. The water plunges into a chasm about 400 feet deep and then flows through a narrow zigzag gorge.

The Zambezi has built a large delta. Its mouths are generally barred with sand, but vessels that can float over the bars can ascend for about 300 miles.

The main sources of the Orange river system are in the eastern coast ranges of southern Africa. Even the main river is too shallow for steamers, and many of the branches flow only during the wet season. There is good pasturage in the eastern part of the basin, but the middle and western parts are little better than a desert.

Cape of Good Hope is crossed from east to west by a rugged plateau that forms the southern end of the African highland. The principal range is the Snow mountains.

Near the city of Cape Town rises a huge flat-topped rock called *Table mountain*. Southward from this rocky mass extends a small peninsula ending in the well-known cape of Good Hope.

Madagascar, the largest island off the coast of Africa, is about two and a half times as large as Great Britain. Its coastal region is mostly low and unhealthful, but the interior consists largely of grassy or wooded plateaus.

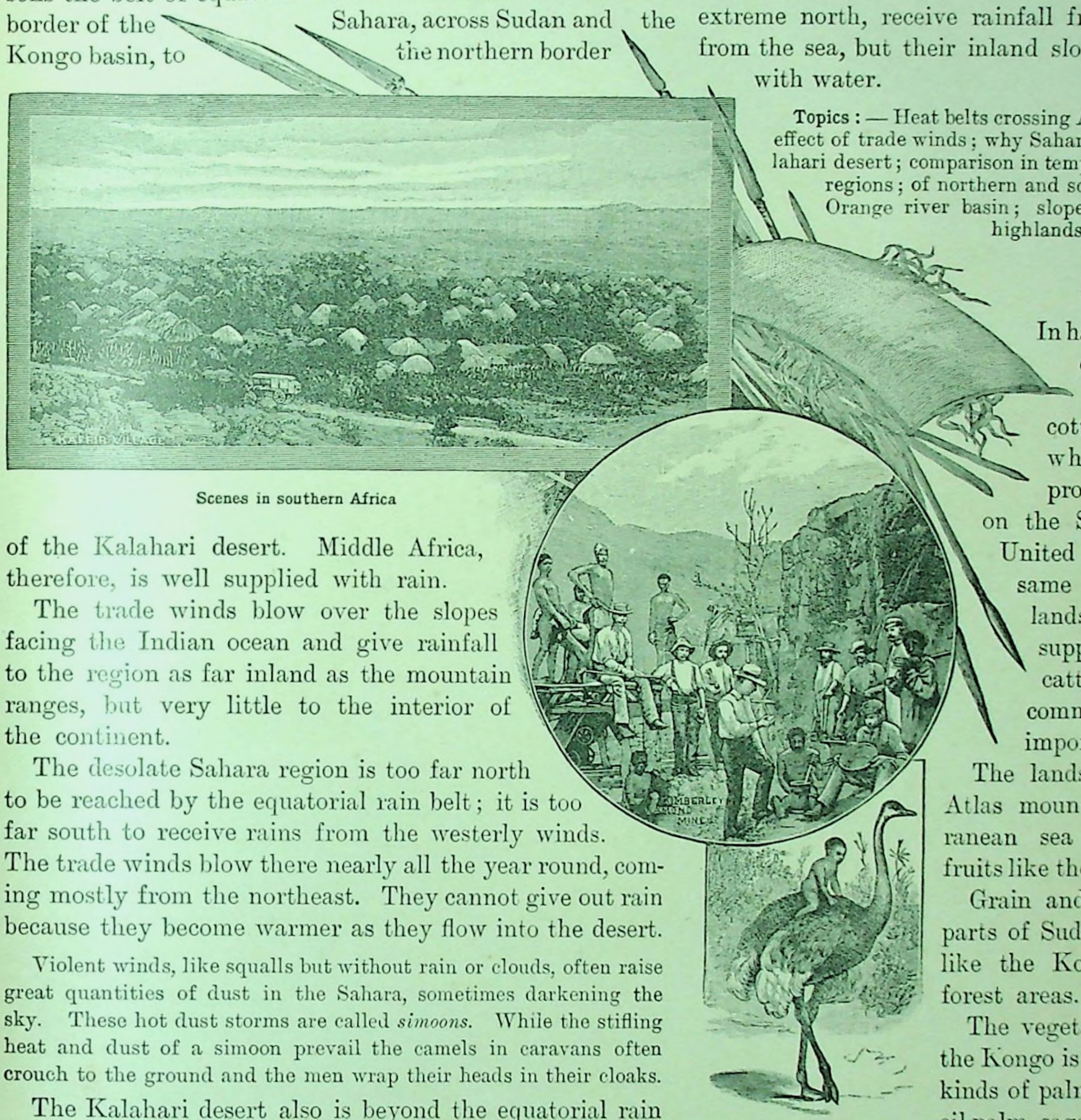
Among the small islands off the coast of Africa may be named *St. Helena*, the rocky isle to which the British banished Napoleon after his defeat near Waterloo, a small town of Belgium; the Canary islands, belonging to Spain; the Cape Verde and Madeira islands and the Azores (the latter far to the northwest), belonging to Portugal.

Topics: — General form of Africa; Suez canal; general surface of continent; coast regions; Abyssinia; Nile; pyramids and sphinx; Sahara; arid regions of Old World; Atlas mountains; Sudan; lake Chad; Niger basin; Kong mountains; Kongo basin; volcanic peaks of equatorial Africa; Zambezi basin; Victoria falls; Orange river basin; highlands in Cape of Good Hope; Table mountain; cape of Good Hope.

118. Climate

Africa is the hottest of the continents. Only the extreme southern part of this great land mass is in the cool belt.

The maps on page 31 show that with the changing seasons the belt of equatorial rains shifts from the southern border of the Sahara, across Sudan and the Kongo basin, to the northern border of the Kalahari desert. Middle Africa, therefore, is well supplied with rain.



Scenes in southern Africa

The trade winds blow over the slopes facing the Indian ocean and give rainfall to the region as far inland as the mountain ranges, but very little to the interior of the continent.

The desolate Sahara region is too far north to be reached by the equatorial rain belt; it is too far south to receive rains from the westerly winds. The trade winds blow there nearly all the year round, coming mostly from the northeast. They cannot give out rain because they become warmer as they flow into the desert.

Violent winds, like squalls but without rain or clouds, often raise great quantities of dust in the Sahara, sometimes darkening the sky. These hot dust storms are called *simoons*. While the stifling heat and dust of a simoon prevail the camels in caravans often crouch to the ground and the men wrap their heads in their cloaks.

The Kalahari desert also is beyond the equatorial rain belt, even when farthest south; it is also too far north to receive rainfall from the westerly winds.

Near the equator the summer heat is not so strong as it is in the deserts of Kalahari and Sahara. In the equatorial region clouds shut out much of the sunshine, and even when the sun shines from a cloudless sky the dense forests shelter the ground. The land and the air are also cooled by frequent rains.

Intense summer heat is felt in these deserts, as there are neither trees nor grasses to shield the surface. During the day the dry sand or rock is quickly heated and in turn heats the air. During the night the bare surface and the cloudless air often become very cool.

The southern half of Africa is not so hot as the northern. In the south the continent is narrower and the interior is nearer the sea. The inland regions are therefore sooner reached by sea winds, with clouds and occasional rains.

The upland in the eastern part of the Orange river basin receives rains from the westerly winds, but the lower middle and western parts of this basin have little rainfall.

The seaward slopes of the Snow mountains of southern Africa, as well as those of the Atlas highlands in the extreme north, receive rainfall from the winds blowing from the sea, but their inland slopes are poorly supplied with water.

Topics: — Heat belts crossing Africa; equatorial rain belt; effect of trade winds; why Sahara is so barren; simoon; Kalahari desert; comparison in temperature of desert and forest regions; of northern and southern parts of continents; Orange river basin; slopes of the Snow and Atlas highlands.

119. Plant Life

In harvest time on the fertile delta and flood plains of the Nile may be seen cotton, sugar cane, rice, wheat, corn and other products like those raised on the Southern plains of the United States in nearly the same latitude. The grass lands of the Nile valley support many sheep and cattle. Date trees are very common, and the fruit is an important article of food.

The lands that slope from the Atlas mountains to the Mediterranean sea produce grains and fruits like those of southern Europe.

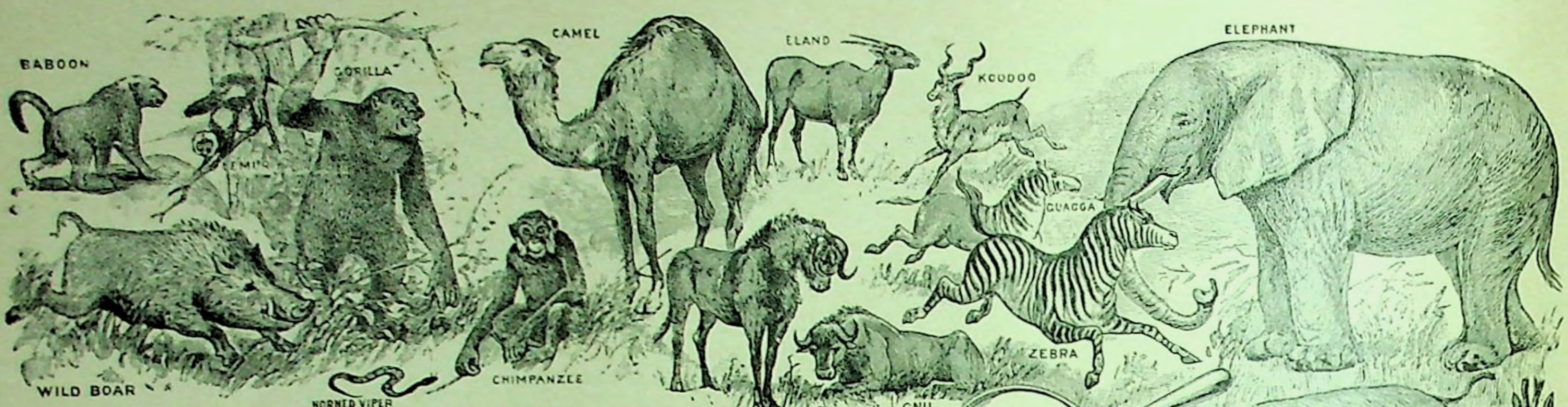
Grain and cotton are raised in parts of Sudan. Southern Sudan, like the Kongo basin, has large forest areas.

The vegetation of the valley of the Kongo is very luxuriant. Many kinds of palms abound, such as the oil palm, sago palm and cocoa palm. Among the useful food plants are the cassava, yam, plantain and sugar cane. The oil palm and cotton are other important products.

The white people have established many trading stations along the coasts of tropical Africa and in the Kongo basin.

Wheat and other kinds of grain are raised on the seaward slopes in the southern part of Africa. The grass lands in the same region support many cattle and sheep. There is excellent pasturage in the eastern part of the Orange river basin.

Topics: — Products of the Nile valley; of Mediterranean slopes of Africa; of Sudan; of Kongo basin; of South Africa.



120. Animal Life

The Sahara separates the home of the animals in middle Africa from the lands farther north.

Not far from the equator, on the west coast of Africa, are found many large and fierce apes. The largest and fiercest is the gorilla. Smaller apes and monkeys are found in all parts of the continent.

The gorilla is not found in any other part of the earth. It feeds mostly on the fruit of banana plants and palm trees. For a nest it weaves vines into a rude hammock or mat among thick branches. The chimpanzee also is found in the same region.

The vast desert tract of northern Africa, western and middle Asia is the home of the camel.

The camel has a wide sole under the toes of each foot, to prevent it from sinking into the sand. The nostrils can be closed at will, and a veil of hair hangs over the eyes, to keep out the hot stinging sand that often blows over the desert.

The camel of Africa has a single hump on its back; that of central Asia has a double hump. Before the animal starts on a long journey its master sees that the hump or humps are very large. These odd swellings, as we have learned, are masses of fat. When the beast has gone for a long time without food this fat nourishes the body.

The camel can go without water for three or four days while bearing a heavy load across the heated desert. The body is supplied with water from pouches, or water cells, on the walls of the first stomach.

Camel's milk and flesh are used for food. The long hair that grows on the animal's hump, neck and legs is made into cloth.

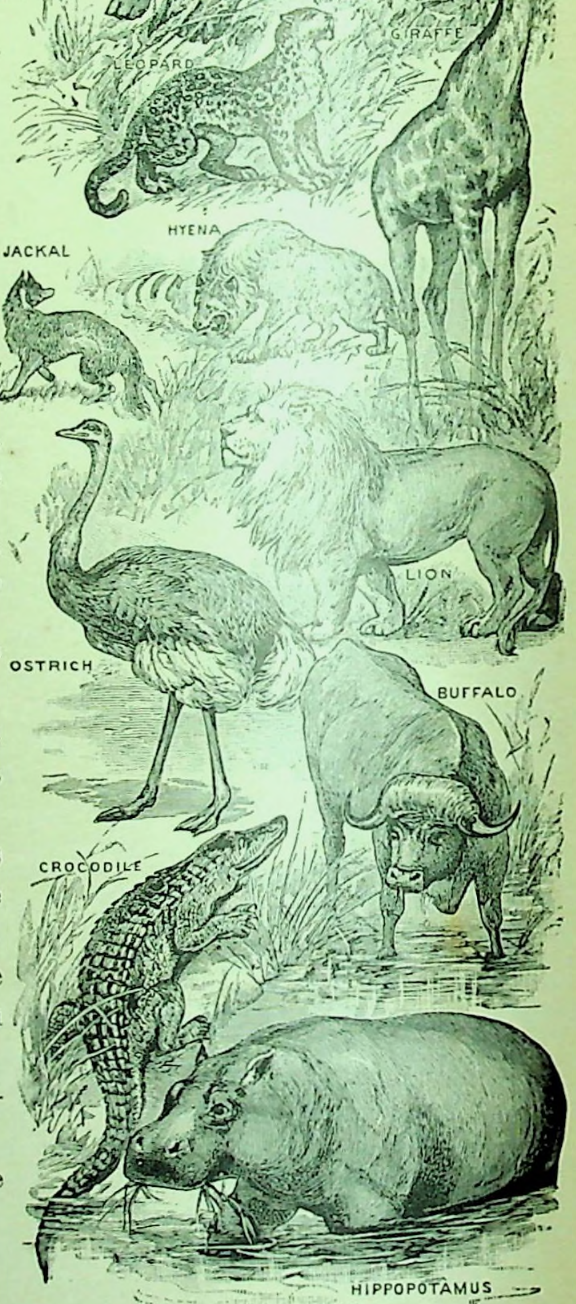
One species of long-eared elephant lives in the parts of Africa where it can find branches and long grasses for food. Each year thousands of these giant beasts are killed for their ivory tusks.

Among the other large and fierce animals of Africa are the lion, rhinoceros and hippopotamus. There were once many giraffes, but most of them have been killed.

In the grass lands in the southern half of this continent is found the Cape buffalo. The ostrich, that supplies valuable feathers, or *plumes*, is reared in various parts of Africa.

Cattle are not native to Africa, but many cattle are now raised in the southern half. The tsetse fly of Africa stings cattle and often kills them.

Topics: — Tell what you can about gorilla; camel; other large animals of Africa; where Cape buffalo is found; ostrich; cattle in Africa.

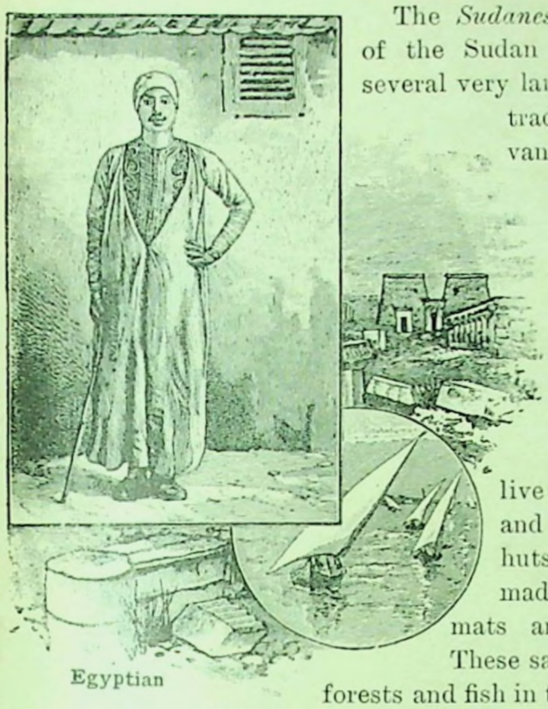


121. People

What do lessons 24 and 28 tell about the people of Africa? Name some of the plants and animals that these people see.

The millions of black people that live in the part of Africa extending from the Sahara to the southern end of the continent belong to many different tribes that vary in intelligence, in language and in customs.

The Negroes in a large region stretching across the southern half of Sudan, especially in the basin of the Niger river and lake Chad, are well advanced in many respects beyond the savage state. They carry on an extensive trade, not only with the white people that have built trading stations on the coast or on the Kongo river, but also by caravans with the people of Egypt and other northern countries.



Egyptian

The *Sudanese*, as the black natives of the Sudan are called, have built several very large towns that form the trade centers for the caravans. The ivory tusks of elephants form a leading article of export. Camels and horses in large numbers are reared for market. Grain and cotton are also important products.

The Kongo Negroes live mostly in small towns and villages. Many of the huts of these people are made of grass woven into mats and fastened to poles. These savages hunt in the great forests and fish in the deep streams. They sell ivory, palm oil and other products to the white traders that live in the coastal towns or that visit their inland homes.

The Negroes of southern Africa, chiefly in the basins of the Zambezi and Orange rivers, are known as *Kaffirs.* Their color is dark brown. Some of them raise grain and have herds of cattle. The Kaffirs include about three fourths of all the people in southern Africa; the others are white people from Europe, mostly from the British Isles and Holland. Bands of small people called *Bushmen* live in and round the Kalahari desert. They have no gardens but live by hunting the antelopes that feed on tufts of grass growing in this region. These small savages belong to the Negro race. *See Kaffir huts on page 181.*

Cairo, Egypt

Most of the people north of the Sahara, as well as in the desert itself, belong to the Semitic or dark branch of the white race.

The desert tribes consist mostly of wandering Arabs, or *Bedouins.* Their original home was Arabia, hence the name *Arabs.*

The upper basin of the Nile, in middle Africa, forms part of the great region peopled by Negroes. The lower basin of the Nile, including the region of the rich flood plains and the delta, is one of the most thickly settled parts of the world. Most of the people belong to the white race, though their skin is very dark. They are known as *Egyptians;* among them live many Arabs.

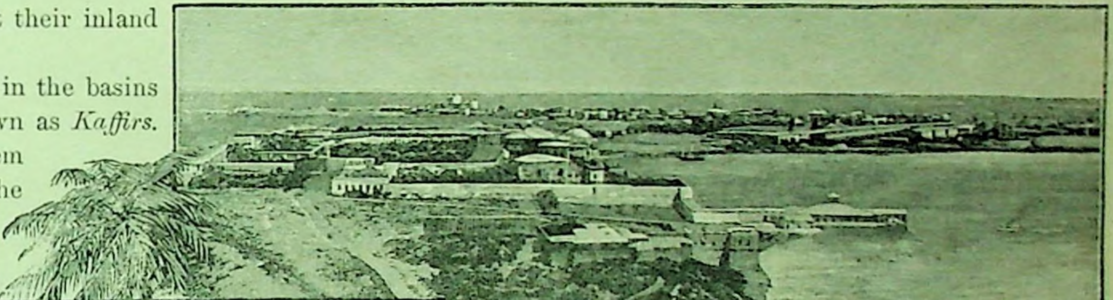
Other swarthy or dark-skinned people of the Semitic branch of the white race live in the countries along the southern shore of the Mediterranean sea. *See pictures of the Egyptian and the Bedouin on this page; the Algerian, page 184.*

Topics: — Negroes of Sudan and their occupations; Kongo Negroes; Kaffirs; white people of southern Africa; Bushmen; Egyptians; people of other countries of northern Africa.

122. Countries and Cities

EGYPT. This country now forms one of the dependencies of the great British empire whose possessions are found in all parts of the world. The *khedive,* or ruler, of Egypt resides in **Cairo,** the capital. This is one of the oldest cities in the world.

The principal exports of Egypt are cotton and cotton seed. The most valuable imports here, as in all other African countries, are various kinds of cloth. Great Britain controls the greater part of the foreign trade of Egypt.



Alexandria

Alexandria, in the Nile delta, is the largest seaport of this country.

Before the discovery of the route from Europe to India by way of the cape of Good Hope, Alexandria was one of the greatest ports in the world. When the East India trade with western Europe was turned away from the Mediterranean sea the port in the Nile delta rapidly declined. The building of the Suez canal has greatly increased the trade of Alexandria.

TRIPOLI. This country, called also Libia, is a possession of Italy. The population of Tripoli is smaller than that of Boston.

Bedouin

The capital, also named **Tripoli,** is the only important city.

Tunis and Algeria. These countries have been added to the possessions of France. They form part of the French territory which extends across the Sahara and the Sudan.

The coastal districts of Tunis and Algeria have many fertile valleys that produce wheat. Olives grow here in abundance, and cattle and sheep find good grazing land. The cities of **Tunis** and **Algiers** export wheat, olive oil, wool and hides to France.

Algerian

Morocco is held by France. Its products are similar to those of Algeria. **Fez** and **Morocco** are the principal cities of Morocco.

Sierra Leone. This small colony belongs to the British nation. **Freetown** exports palm oil.

Liberia. This is a Negro republic settled largely by freed slaves from the United States. **Monrovia,** the capital, is named after a former President of our country. The chief exports from Monrovia are coffee and palm oil.

Belgian Kongo. This colony belongs to Belgium. **Boma** is the local capital. The most valuable exports of Belgian Kongo are rubber, ivory, tusks of elephants, palm nuts, palm oil and gold in bars.

Union of South Africa. This country is a valuable British possession. It embraces the provinces of Cape of Good Hope, Natal, the Transvaal and Orange Free State. In Cape of Good Hope wheat and other grains are raised on the seaward slopes, and many cattle, sheep and ostriches are reared in the grassy areas. At **Kimberley** are located the richest diamond mines in the world. Diamonds, wool, ostrich feathers and hides are leading exports.

Cape Town is the chief seaport of South Africa. The legislature of the Union meets in this city.

The Transvaal is north of the other provinces. It has rich gold fields and grazing lands. Most of the white settlers are English and Dutch, the latter being known as *Boers*. The aborigines are black people of the Kaffir group.

Pretoria is the capital of the Union of South Africa. **Johannesburg,** in the heart of the gold region, has had a very rapid growth.

Orange Free State and Natal are small provinces in the grazing district of the eastern part of the Orange river basin.

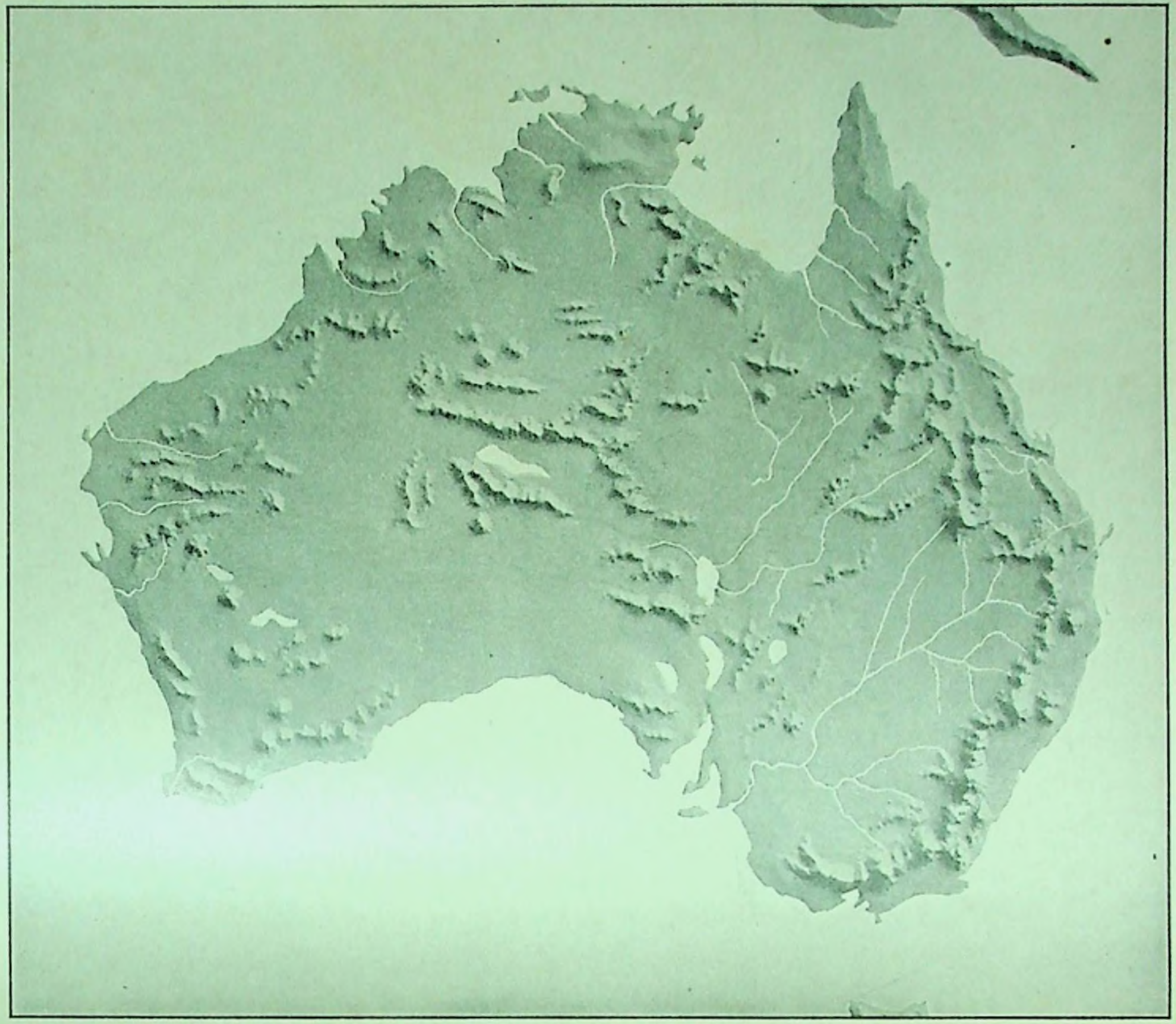
European nations have seized nearly all parts of Africa. The colored map on page 179 shows the claims of each nation.

Map Studies:—Describe the position of Australia with regard to the other continents and the oceans. Study the relief map and describe as well as you can the surface of Australia. Which of the continents does Australia most closely resemble in outline? Sketch the coast line of Australia, using the guide map in the supplement.

Compare Australia in size with Europe and with North America. *See maps on pages 17, 20 and 23.* Which part of Australia has the highest mountains? What does lesson 17 tell about the surface of this continent? Where is the Murray river? In what range of mountains does it rise? What large branch does this river receive from the north?

What great island lies north of Australia? In what direction from this continent are Borneo, Sumatra and Java? The islands of New Zealand? Where is the island of Tasmania?

What tropic crosses middle Australia? What do lessons 24, 28 and 29 tell about this continent?

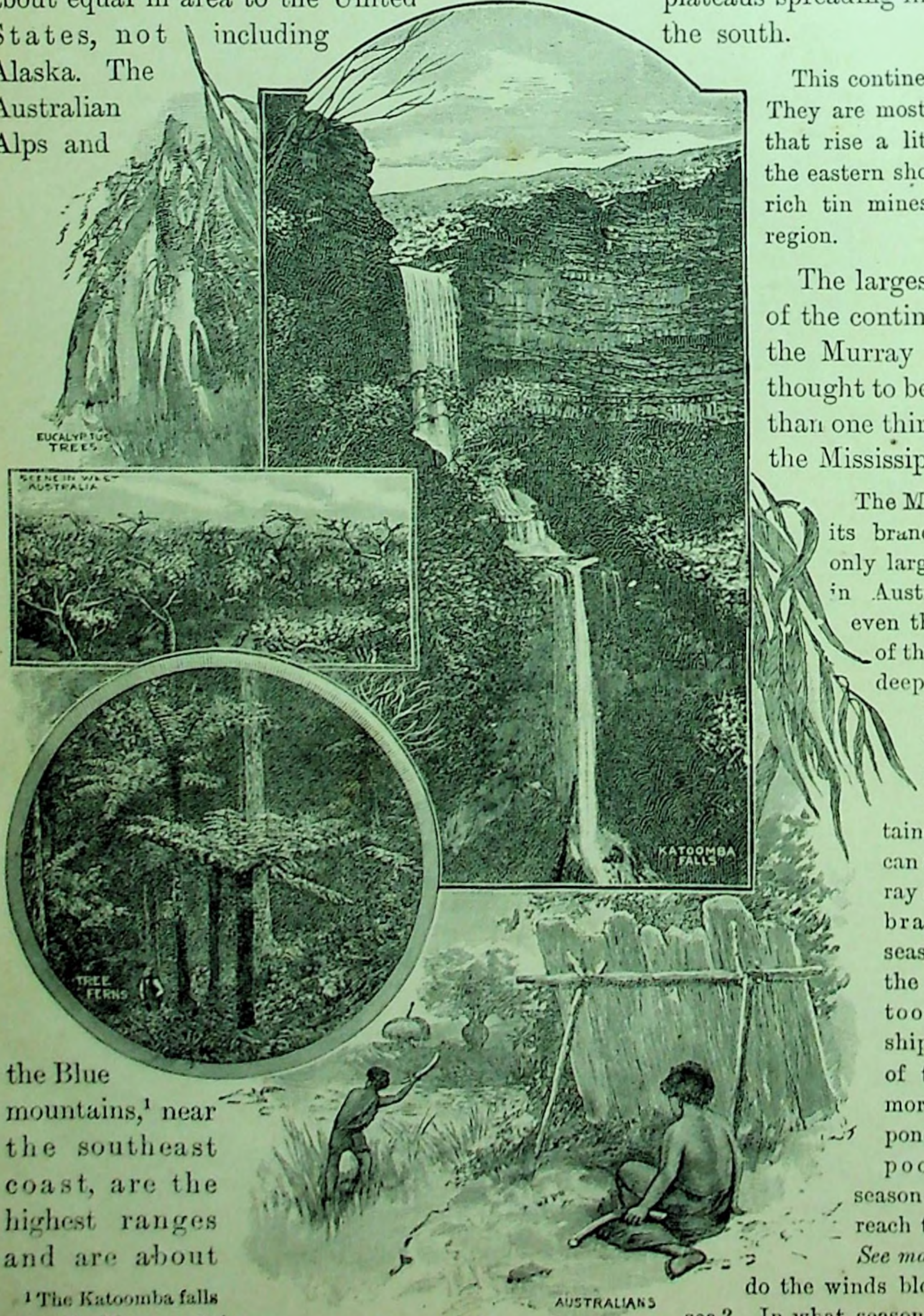


RELIEF MAP OF AUSTRALIA

AUSTRALIA

123. Surface and Climate

Australia, the smallest of the continents, is about equal in area to the United States, not including Alaska. The Australian Alps and the Blue mountains,[1] near the southeast coast, are the highest ranges and are about equal in height to the southern part of the Appalachian highland. Except in the southeast, the scattering ranges are little more than high hills, most of which rise above a half circle of low plateaus spreading inland from all coasts except the south.

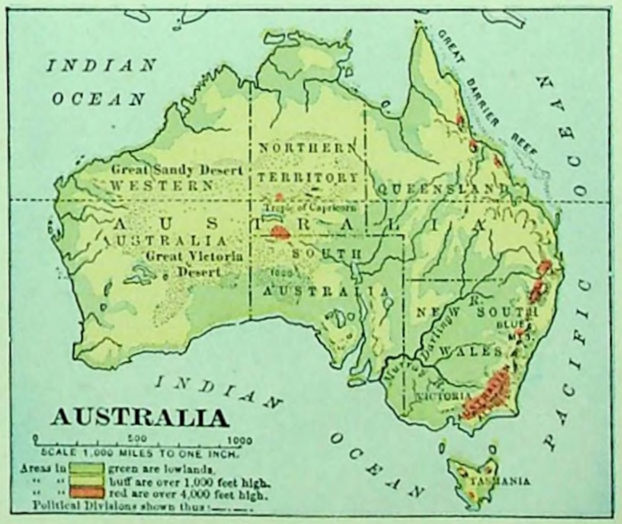


This continent is famous for its gold mines. They are mostly in the hills and mountains that rise a little back from the eastern shore. There are rich tin mines in the same region.

The largest river basin of the continent is that of the Murray river. It is thought to be a little more than one third as large as the Mississippi basin.

The Murray river and its branches form the only large river system in Australia, and yet even the main stream of this system is not deep enough to float large sea-going vessels. After heavy rainfalls in the mountains small vessels can ascend the Murray and some of its branches; but in seasons of drouth the rivers become too shallow for shipping, and some of them are little more than chains of ponds or shallow pools. In what season does the equatorial rain belt reach the northern part of Australia? *See maps on page 31.* In what season do the winds blow from Australia towards the sea? In what season do they blow inland from the sea? Compare the maps on page 31 and tell what you can about the winds of Australia.

When the equatorial rains reach the northern part of the pampas and the valley of the Kongo they also fall on the portion of Australia north of the tropic of Capricorn; at the same time winds from the sea blow inland over the eastern slopes of the Australian Alps and the Blue mountains, giving plentiful rains to the whole Pacific slope. During the southern winter the winds blow seaward and therefore yield little rain.



The winds that enter Australia from the ocean on the south seldom give out rain, because they are becoming warmer as they move towards the equator. The summer trade winds that give rainfalls to the Pacific slope of the eastern ranges pass as dry winds over the interior. The equatorial rains do not reach far into the interior. A vast area in middle and southern Australia is therefore very dry, and parts are great deserts. The rivers of the Murray system and other streams farther north are fed chiefly by the rains in the highland of the east and southeast. Inland Australia has a number of large lakes with no outlet to the sea.

Topics: — Area of Australia; mountains and hill ranges; minerals; Murray river basin; winds and rainfall; inland Australia.

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[1] The Katoomba falls are in the Blue mountains.

124. Plant Life

Most of the Australian trees are evergreen, that is, they do not shed their leaves in winter, though some of them shed their bark throughout the year. The giant eucalyptus trees are of this kind. The largest forests in Australia are in the eastern highland, where the rainfall is heaviest. Wide areas of the inland region are covered with coarse scrubby bushes; other large areas are barren deserts.

Wheat and corn are not native to Australia, yet they now form the chief source of wealth there. They thrive best in the three eastern states, especially on the narrow plains over which the moist trade winds blow.

Topics : — Trees; grains.

125. Animal Life

Most of the animals of Australia differ greatly from those in other parts of the world. Many have pouches for carrying their helpless young. These pouches are made by folds in the skin on the underside of the body.

The name *kangaroo* is given to several species of pouched animals. Some are about the size of rats; others are as large as men.

Large kangaroos are hunted for their skins, from which fine leather is made. These animals travel very swiftly, by making long leaps.

The duck mole of Australia lays eggs and sits on them, but is not a bird. It has soft brown fur and may often be seen in ponds and streams, feeding on insects and worms in the water.

The echidna is another animal that lays eggs, but it does not sit on them. The eggs are hatched in a warm pouch, and there the little animals remain till they grow strong.

This queer animal feeds on ants and other insects. It has no teeth, but from a long snout it runs out a sticky tongue to seize its food. Its body is covered with sharp spines.

A large running bird of Australia, called the *emu*, is related to the ostrich of Africa.

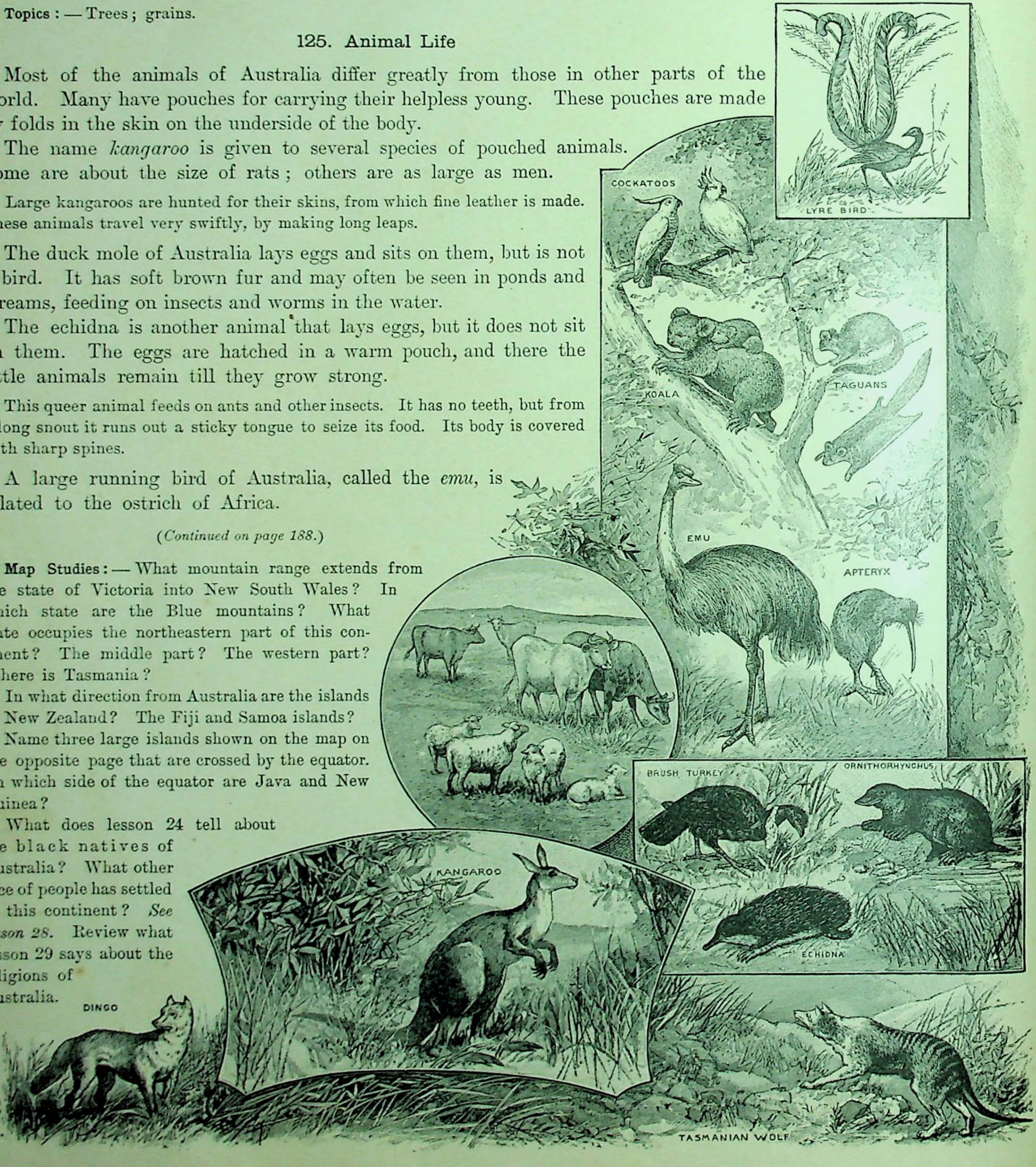
(*Continued on page 188.*)

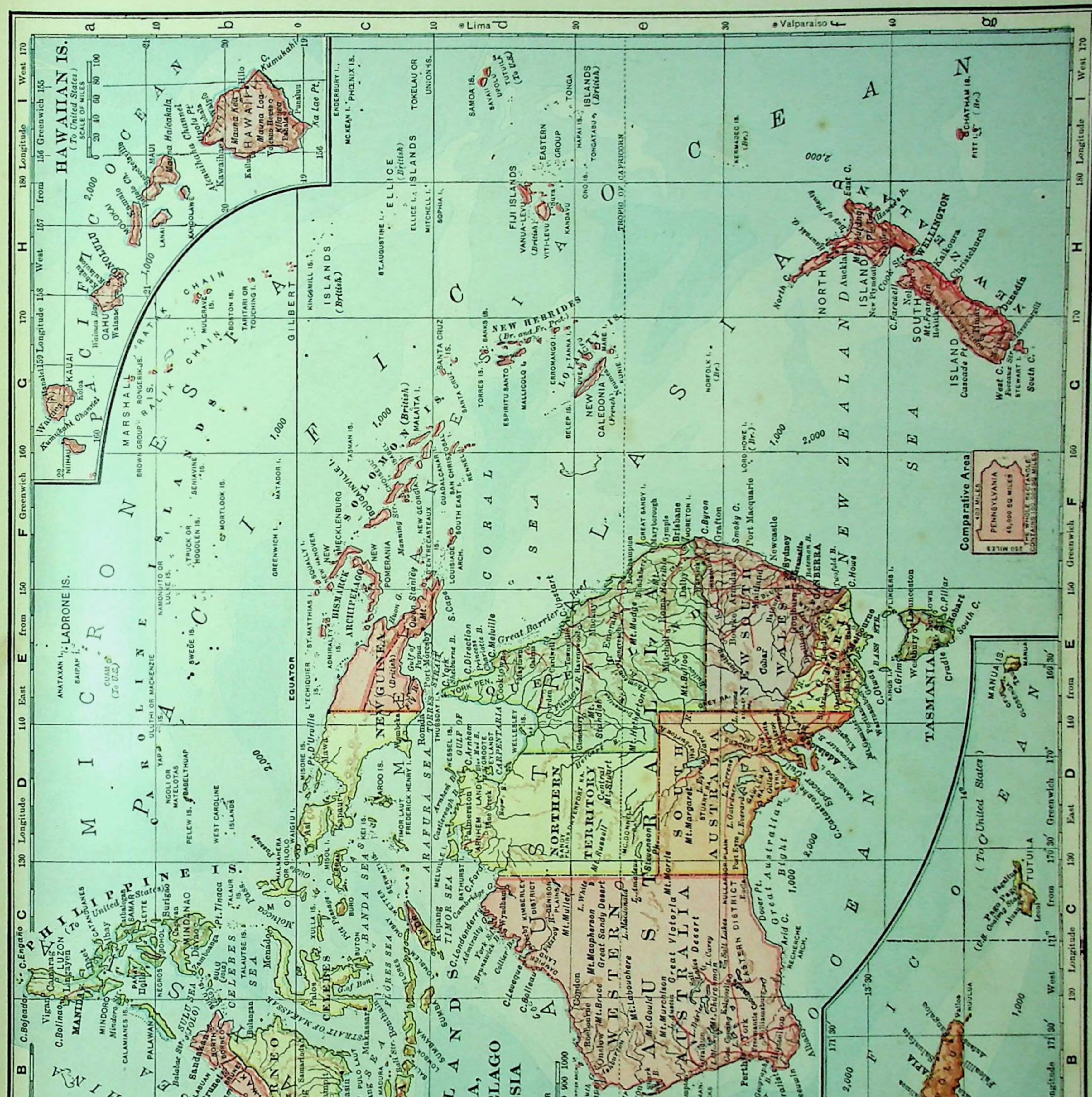
Map Studies : — What mountain range extends from the state of Victoria into New South Wales? In which state are the Blue mountains? What state occupies the northeastern part of this continent? The middle part? The western part? Where is Tasmania?

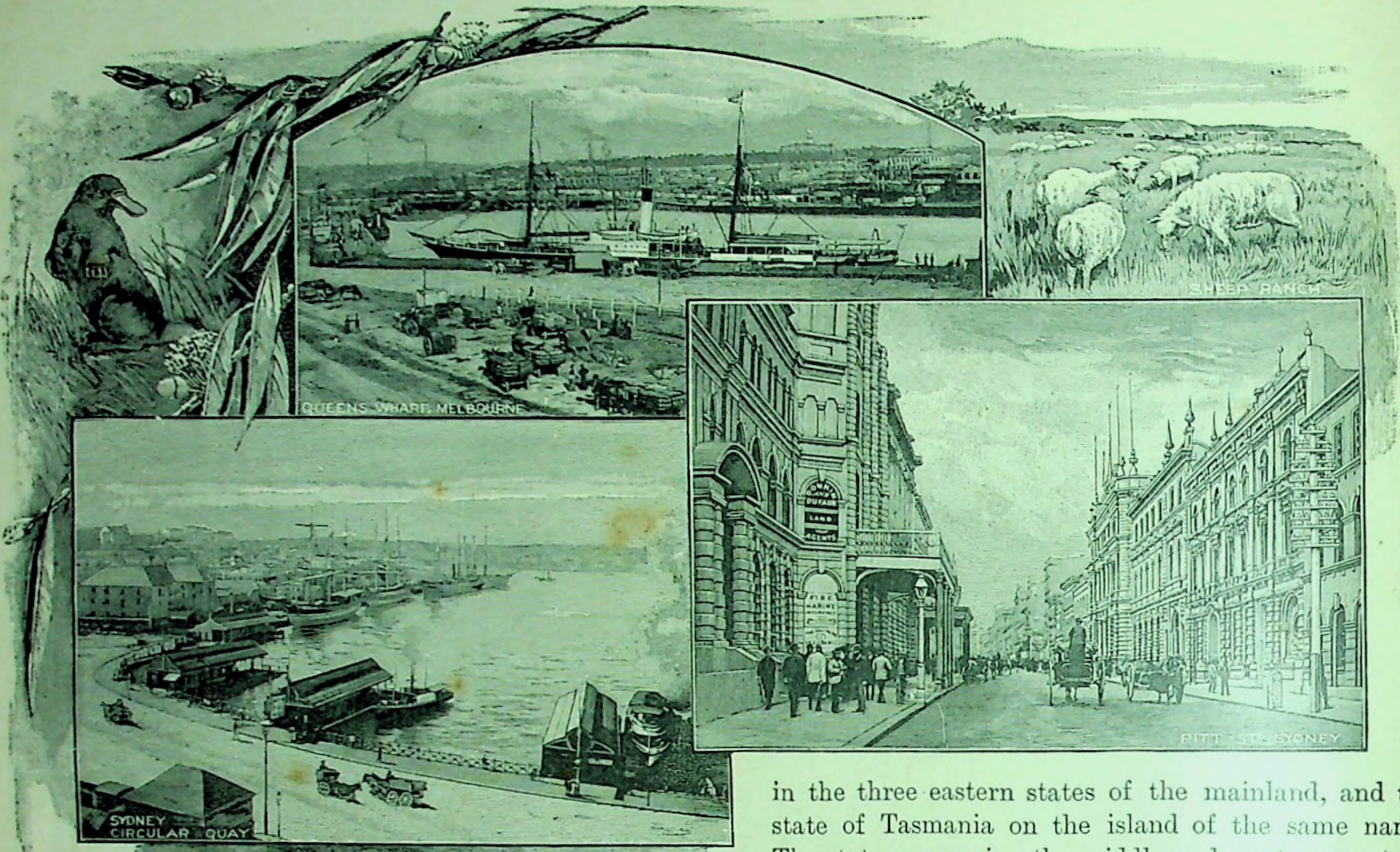
In what direction from Australia are the islands of New Zealand? The Fiji and Samoa islands?

Name three large islands shown on the map on the opposite page that are crossed by the equator. On which side of the equator are Java and New Guinea?

What does lesson 24 tell about the black natives of Australia? What other race of people has settled in this continent? *See lesson 28.* Review what lesson 29 says about the religions of Australia.




AUSTRALASIA, MALAY ARCHIPELAGO AND MICRONESIA
SCALE OF MILES ON THE EQUATOR
0 100 200 300 400 500 600 700 800 900 1000
HAWAIIAN IS. (To United States)
SAMOA IS.
Comparative Area
PENNSYLVANIA 45,000 SQ. MILES
PACIFIC OCEAN
INDIAN OCEAN
MICRONESIA
MELANESIA
POLYNESIA
AUSTRALIA
WESTERN AUSTRALIA
NORTHERN TERRITORY
SOUTH AUSTRALIA
QUEENSLAND
NEW SOUTH WALES
VICTORIA
TASMANIA
NEW ZEALAND
NORTH ISLAND
SOUTH ISLAND
NEW GUINEA
BORNEO
CELEBES
PHILIPPINE IS.
SUMATRA
JAVA
FRENCH INDO CHINA
SIAM
MALAY PENINSULA
SOUTH CHINA SEA
CORAL SEA
TASMAN SEA
ARAFURA SEA
TIMOR SEA
BANDA SEA
CELEBES SEA
SULU SEA
GREAT AUSTRALIAN BIGHT
GULF OF CARPENTARIA
BISMARCK ARCHIPELAGO
SOLOMON IS.
NEW HEBRIDES
NEW CALEDONIA
FIJI ISLANDS
CAROLINE IS.
MARSHALL IS.
GILBERT ISLANDS
ELLICE ISLANDS
LADRONE IS.
EQUATOR
TROPIC OF CAPRICORN
Longitude East from Greenwich
Longitude West from Greenwich



The plumage of the emu is long and hairlike. This bird has only the rudiments of wings and cannot fly, but it runs with great speed. It is hunted for the oil in its skin.

Australia abounds in black swans, lyre birds, parrots and many other kinds of birds.

Sheep and cattle are not native to this continent, but are now counted there in millions. The chief grazing regions are near the eastern ranges.

Part of this continent is in the warm belt of the south.

Topics: — How animals of Australia differ from those of other lands; describe kangaroo; duck mole; echidna; emu; some birds of Australia; sheep and cattle.

126. People

The aborigines of Australia belong to the black race. *See lesson 24.*

The white people who have gone to this continent are mostly from the British Isles. They have settled chiefly in the three eastern states of the mainland, and the state of Tasmania on the island of the same name. The states occupying the middle and western parts of the continent are very thinly settled. In Australia there are about one twentieth as many people as in our own country.

Australia is one part of the British empire and is a union of states under the name of *Commonwealth of Australia.* The Governor-General of Australia is appointed by the British crown, but the country has its own law-making body.

Topics: — Aborigines; white people; distribution of population; government.

127. Cities of Australia

The states in the southeastern part of this continent are the most thriving. Here are vast grazing districts that support millions of sheep and cattle. Large areas are planted with wheat, Indian corn and other cereals. Great quantities of gold and tin are mined. Middle and western Australia are thinly settled.

The principal exports from Australia are wool, gold and cereals. The most valuable imports are cloth and iron manufactures. The largest seaports are in southeast Australia, in the most productive states.

Melbourne, the chief seaport of Victoria, and **Sydney**, the principal port of New South Wales, are the largest cities of Australia. The population of each is almost as large as that of Boston. Melbourne has extensive manufactures. Sydney is on a long and deep landlocked bay. This is the oldest city in Australia.

Relation of Topics, — following Lesson 10

All figures below refer to lessons; for general review, see topics at the end of lessons

In how many ways can you find out in what direction north is from you (2)? How can you tell directions on maps (2)?

In what ways are rocks broken up to form soil (3)? State some uses of water in the ground (3, 4); on the ground (4, 5, 6, 9, 10); in the air (3, 4).

State how some lakes are formed (5, 7, 8). Why do salt lakes form in some places and not in others (5)? Why do people settle near rivers (5)?

Tell some ways in which plains are formed (6, 8). Stir some sand and fine soil together in a glass of water; let it stand and see which part settles last before the water is clear; then try to think which would build a delta of the finer soil,—a swift or a slow river.

Tell some ways in which mountains are made (7, 8). Why does not the cap of snow and ice on high mountains become deeper as years pass (7)? Name two causes of earthquakes (7, 8).

Describe how some valleys are made (7, 8). Tell what you can about lava (8).

Make a drawing of a coast line showing as many kinds of shore forms as possible (10). How are some islands formed (6, 7, 8, 10)?

Of what is the earth made (1)? Tell some of the uses of rock (1, 3, 4, 5); of soil (3); of water (*think*); of air (*think*).

Tell what you know about the sea (9).

Relation of Topics, — following Lesson 17

Name some of the many forms of land of which the surface of continents consists (3 to 8). Name some of the forms of land and water found along the shores of a continent (10).

Where do continents get their soil (3, 7)? Would you expect to find the deepest soil on mountain sides or on moist plains (3, 6)?

In what parts of continents would you expect to find the broadest and slowest parts of rivers (5)? Name two kinds of plains that are formed along seacoasts (6). Describe some kinds of plains that are formed of sediments (6).

Name some ways in which the mountains of continents have been formed (7, 8); the valleys (7, 8); the plains (6, 8); the lakes (5, 7, 8); the islands and other shore forms (6, 7, 8, 10).

Which continents reach northward into the cold regions round the pole (11)? Which continent is farthest from the equator, at its nearest point (11)? Which continent reaches farthest south (11)? How many continents are larger than the one on which we live (11)? How many are smaller?

Which two oceans border each on four continents (12)? Which border on three continents? Which does not border on either of the six continents? What lands and what oceans would a person cross in following the equator around the earth (12)?

Name a gulf, a bay and a sea that are arms or branches of the Atlantic ocean (13). State near which ocean or sea is found the largest highland in each continent (13–17).

Give a brief description of the surface of North America (13); of South America (14); of Europe (15); of Asia (16); of Africa (17); of Australia (17).

Describe the greatest highland (16); the greatest desert (17). Why could not plants and plant-eating animals easily spread across that highland or that desert (16, 17)?

Which continents have wide plains east of the principal highlands (13, 14)? Which north of the principal highlands (15, 16)? Which west (17)?

Which continents have plains reaching into the far north (13, 15, 16)? Which have wide plains that are crossed by the equator (14, 17)? In which continents are there highlands that cross the equator?

Which of the continents bordering on the Pacific has the most broken coast line (16)? Which bordering on the Atlantic (15)? Which two continents have large groups of islands off their southeast shores (13, 16)? Which of these groups of islands is nearer the equator?

Tell what you have learned about some of the groups of people in each continent (13 to 17).

Relation of Topics, — following Lesson 23

Describe the climate of the city or town in which you live.

State one effect of the earth's rotation (2); of the earth's revolution (19). Describe the seasons of the part of the country in which you live; also the change in length of day and night there.

What would be the effect on the seasons if the axis of the earth stood upright from the orbit (19)? How would such an upright axis affect your own life, as to clothing? As to sports and games? As to trees and other plants that supply part of your food? As to birds that build nests near your home? As to the work of the people in your town or city?

Where do the vertical rays of the sun fall at the beginning of each season (19)? State in which month each season begins (19).

Draw an upright or vertical line; then draw beside it another line showing about how much the axis of the earth inclines (16). Can you tell why lines at 23½° from the equator were chosen for the tropics (20)? Can you tell why lines at 23½° from the poles were chosen as polar circles (20)?

Name the line or lines bounding each zone (20). Which continents are crossed by the Arctic circle (20)? By the tropic of Cancer? By the tropic of Capricorn?

Across what country and gulf in the New World does the tropic of Cancer pass (13, 20)? Across what desert in Africa does that tropic pass (17)? On which side of the highland of Tibet does the tropic of Cancer run (16)? Which continent lies wholly north of that tropic (15)? Which wholly south of it (17)? Which continents are crossed by the tropic of Capricorn (20)?

In which zone is the basin of the Amazon (14, 20)? Of the Mississippi? Of the Kongo? In which zones do the Andes lie (13, 20)? The Rocky mountain highland (13, 20)? In which zone are the Alps (15, 20)? The highland of Tibet (16, 20)?

In which zone is the greater part of the Central plain of North America (13, 20)? Of South America? Of Europe and Asia (Eurasia)? In which continents do plains extend into the north frigid zone (20)?

How is the earth's atmosphere heated (19)? Name two large river basins in the hot belt (14, 17, 21). In which heat belt are the selvas (14, 20)? The pampas? The prairies round the Great Lakes of North America (13, 21)? The southern half of the Central plain in the United States (13, 21)? Most of the great plain in Europe and northern Asia (15, 20)?

What highlands in Europe and Asia partly divide the lands of the warm belt from those of the cool belt (21)? In which heat belt are all the shores of the Mediterranean sea (21)? In which heat belt are the East Indies and the West Indies (13, 16, 21)?

Name two great river basins, two large groups of islands and a large V-shaped peninsula that have hot or warm weather all the year (13 to 17, 21). Describe the seasons of the Southern plain in the United States (13, 21). What other parts of the world have about the same kind of seasons (21)?

Describe the seasons in the prairies round the Great Lakes (21). What parts of Europe have about the same kind of summers and winters as these prairies (21)?

Describe the seasons in the plains near the Arctic circle (21). Which parts of all the heat belts are cold all the year (7, 13, 21)?

Tell what you can about the work of winds (9, 22, 23).

Name two large river basins and two groups of islands over which the trade winds blow (22). What winds blow most often over the northern half of the United States (22)? Which shores of the United States and Europe receive the heaviest rains from the westerly winds (19, 21)?

Name some river valleys in the equatorial rain belt (22). What low, broad highland in South America is in the path of the trade winds (14, 22)? Against which side of the Andes do the trade winds carry rains (14, 22)? Which side of the Rocky mountain highland in the United States and Canada receives the heavy rainfall of the westerly winds (13, 22)? Which part of the Andes is in the path of the westerly winds and on which slope of the mountains does most of the rain fall (22)?

Which sides of the continents receive the trade winds from over the oceans in the torrid zone (22)? In the temperate zones, where westerly winds prevail, which shores of the continents feel the most effect of warm ocean currents flowing from the torrid zone (23)?

Relation of Topics, — following Lesson 30

What is the difference between a nation and a country (24)?

Describe the seasons in the home of the black people of the Kongo basin (21, 24). What other races of people live in lands having the same seasons (25, 26)? What winds bring rains to these lands (22)? How does the climate in which the black people of Australia live differ from that of the Kongo basin (21)?

In which zone do the savages of the selvas live (25)? How do the seasons in Canada differ from those in the Amazon valley (21)? In what kind of climate do most of the black, the red and the brown people live (24, 25, 26)? What have you learned about the religion and government of such of these people as live in a savage state (29, 30)?

In what ways have the black, the red and the brown races helped the people of the white race (24, 25, 26)? Describe some of the weapons of savage people (24, 25).

Compare the seasons in China and Japan with the seasons in the East Indies (16, 21). Compare the kinds of work done by the yellow people of China with that of the Indians of the selvas (25, 27). How must the daily life among the tribes of yellow people along the Arctic shores differ from that of the Negro tribes of the Kongo basin (24, 27)?

Why have not the yellow people of China spread southwest into India (16)? What great desert in Africa separates the home of the Negro from that of the white race (24, 28)?

Name the principal lands in which white people live (28). Describe the climate in which live the white people around the Mediterranean sea (21, 28); the white people of India and other countries along the south coast of Asia; the white people in the parts of Europe north of the Alpine highland; the white people of southern Africa; the white people of Australia; the white people of Canada; the white people in the northern half of the United States; the white people in the southern half of the United States; the white people along the coast of Brazil; the white people of the pampas.

What races of people are separated by warm oceans (24 to 28)? By cool oceans? By cold oceans? Tell what races of people live in the torrid zone (24 to 28); in the warmer parts of the temperate zones; in the cooler parts of the temperate zones; in the north frigid zone.

Compare the races as to number of people in each (24 to 28).

What class of people are pagans (29)? In what zone are most of them found (24, 25, 26)? In which parts of America are there pagans (25, 29)? In which parts of Africa (24, 29)? In which parts of Asia (27, 29)? In which parts of Australia (24, 29)?

Describe the climate of the country of the Brahmanists (21, 29). What other religion has many followers in the same country (29)? What other religion was first taught in India, but did not take root and soon spread to China and Japan (29)?

What is the religion of the people in the countries round the southern shores of the Mediterranean sea (29)? To what religious group do most of the yellow people belong (29)?

What are the three forms of government (30)? What is the common form of government among savages (30)? What two forms of government are most common among the nations founded by the Aryan branch of the white race in Europe and America (30)? What is the government of the United States (83)? Of England (102)? Of France (30)? How many of the countries in America are not republics (30)? What form of government do you think is the best? Give your reasons for so thinking.

Of what benefit to the people of a country is a good government? Name some benefits which come to us from our government.

Relation of Topics, — following Lesson 35

How is soil made (3)?

Why cannot a wheat or a cotton plant in time spread its seeds and grow all over a continent (31)? Name some of the physical features of continents that keep plants from spreading (31). Why cannot plants spread easily from one continent to another (31)?

How does the sun affect the distribution of plants over the earth (21)? How do winds affect the distribution of plants (22)? Can you recall any way by which ocean currents and winds together may help or hinder plant life in any land (22, 23)?

What plants help to supply food for the people in your home? Name some of the plants useful to the natives of the torrid zone (32). Do you know of any uses made in *your* town or city of plants that grow in the torrid zone?

How may the people of the Amazon valley help to make you comfortable in wet weather (32)? What do the brown people send to us to make our food taste better (32)? Try to find out what people raise the tea or coffee used in your home; also the plant from which the sugar in your home is made.

In what parts of the earth do people raise the most cotton (33)? What are the seasons of the cotton belt (33)? Tell all you can about the manufacture of cotton cloth (33). Try to find out where the fruits you like best are raised. What race of people lives in the warm belt where so much cotton and so many fruits are raised (28)? Name some of the products of the warm belt useful to shipbuilders (33).

What are the seasons of the zone in which people raise most of the wheat and corn (21, 33)? Of what use is it to the people of any zone to have rich grass land, and which zone has the best (34)? What are the prevailing winds of the grain and soft-wood belt (22, 34)? How do the snow and ice of winter often help lumbermen (34)?

What prevents the grains of the north temperate zone from spreading northward into the frigid zone? What must the people of the Arctic regions feed on chiefly (27)?

Relation of Topics, — following Lesson 38

What classes of wild animals cannot live in the frigid zones (36)? In the torrid zone? In dense forests? In grassy plains? On high mountains? What creature can cross lakes and rivers? Deserts? Mountains? When animals are taken from their old homes, in what kind of region do they thrive best (36)?

What prevents the animals of South America from reaching Africa or Australia (37)? Why cannot the large animals of middle Africa roam northward to the shores of the Mediterranean sea (17)? Why cannot the animals of India roam northward to the Siberian plain (16)? What separates the animals of the East Indies from those of Australia?

In what part of South America would you expect to find such animals as feed on the leaves and branches of trees (14)? That feed on grass? Name some animals that the Indians of the selvas see (37); that the white people and the Indians of the Andes use (37); that live in the same land as the Negroes of middle Africa (37); that are common in the land of the Brahmanists (37); that may be hunted by the white people or the black people of Australia (37). What people in their native land may hunt the elephant (37)? The tapir? The tiger? The alpaca? The kangaroo? The giraffe? The gorilla? The condor? The rhinoceros?

What are the most useful animals to the people of the United States (37)? Of India (37)? Of the cold plains near the Arctic circle (27)? Of the highland of central Asia (37)? Of the Sahara (37)? Of the pampas (37)?

What are the seasons of the lands that produce the best fur-bearing animals (21, 37)? Describe the kinds of deer that you have studied (37).

Why is the white bear found only near the Arctic shores (37)? Name some of the animals useful to Eskimos (37).

Can you think of any use for iron in connection with cotton (31, 38)? In connection with products of the forests (32)? In connection with sugar cane (30)? Name as many uses of iron or steel as you can. Which race of people makes the best use of iron?

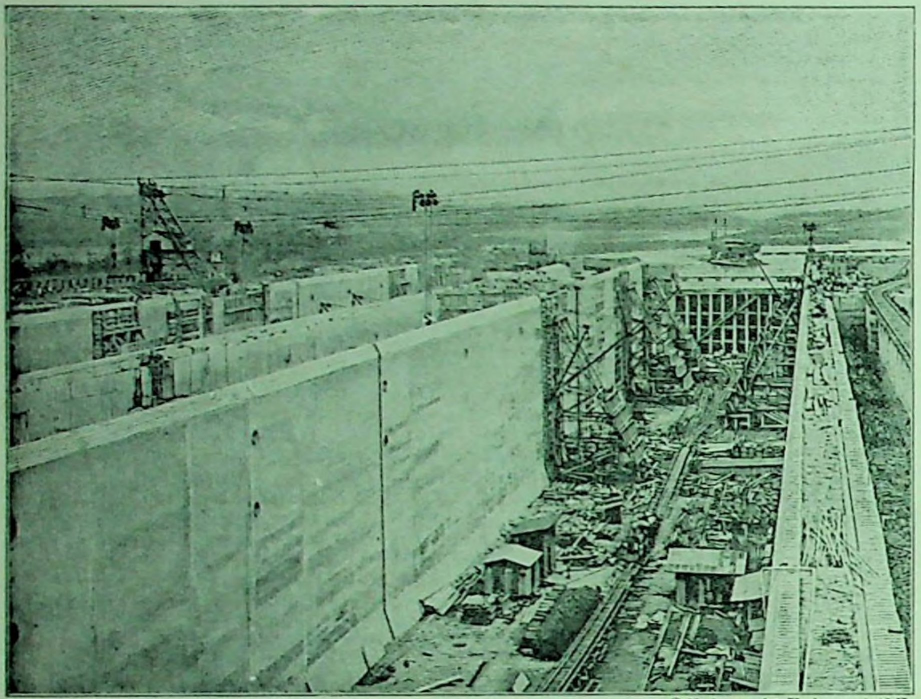
In which zone do you think the people make the most use of coal? What use would savage tribes have for coal and iron? What fuel do Eskimos use (25)?

What animal has been less hunted since large oil-wells have been sunk (37)? Name as many kinds of fuel as you can recall. In what zone are petroleum and natural gas of great use (38)?

Among what races of people would building stone be most used (39)? What kinds of building stone are used in the city or town where you live, or in any city near by?

Panama Canal,—a New Route of Trade

On the isthmus of Panama our nation has done a great work that is helping the commerce of the whole world. A canal has been built across the isthmus, to take great ships from ocean to ocean. The canal is shown on the corner map of the full-page map of South America, page 139.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Finishing the lower lock at Gatun, where three locks lift ships to Gatun lake

On this neck of land our country has a strip of land about ten miles wide and reaching from shore to shore. This is called the *Canal Zone*. It contains about 436 square miles, or a little more than one third the area of the state of Rhode Island. This region is only about 650 miles north of the equator and has the climate of the torrid zone.

The actual work of building the canal took about six years and the cost was about $375,000,000, or about four dollars apiece for every person in our country. It is hoped that this money will all come back in tolls paid by ships using the canal.

The total length of the canal is about fifty miles, but part of this is in deep channels dug out from the shores at both ends, where the sea water is shallow. These are known as *approach channels*. From shore to shore the canal is about forty miles long.

At the north end the approach is in Limon bay, a small arm of the Caribbean sea. Thence the canal extends toward the southeast and not westward. Running about seven miles in the channel, ships reach Gatun, where they pass through three locks and are lifted eighty-five feet to Gatun lake. At full speed they can run about twenty-four miles along the lake and reach what was first known as the Culebra Cut, but what is now called Gaillard Cut, where landslides have caused much trouble by blocking the passage. For about nine miles ships steam in this deep cut, to a lock in which they settle about thirty feet to a little lake. A mile and a half farther on they pass into two locks, dropping to sea level. Then they steam out into the Pacific ocean, through the southern channel.

Gatun lake, to which locks lift the ships, lies in the valley of the Chagres river. The lake is held back by a huge dam nearly a mile and a half long on its top. At the level of the water the dam is 400 feet thick, and at the bottom nearly half a mile thick. It is built of earth,—mostly sand and clay dug from pits above and below the great wall.

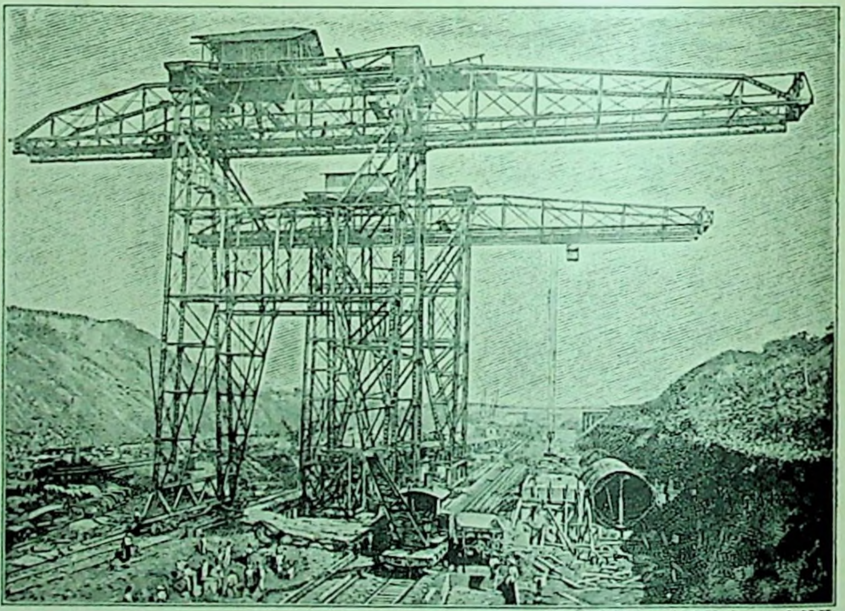
It takes from ten to twelve hours for a steamer to pass through the canal. Of this time about three hours are spent in passing the locks. A steamer can enter in the morning and sail out before dark, crossing from ocean to ocean during a single day. A railroad also crosses the isthmus, along the line of the canal.

The effect of the canal upon ocean trade will be very great. It brings the Atlantic ports of our country thousands of miles nearer the Pacific ports. Ships can now sail almost due south from our eastern seaports to cities along the west coast of South America.

Helps:—Where is the isthmus of Panama? What lands does it connect? What waters does it separate?

How large is the Canal Zone? About how long is it? What nation owns it? How far is it from the equator?

What is said about the cost of the canal? Why are approach channels needed? The crooking of the neck of land makes the canal run in what direction to cross from ocean to ocean?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Giant traveling arms that carried and put in place the material for locks in the Panama canal

At what height is Gatun lake above sea level? What is said about this lake and its dam? How long is Gatun lake? What deep cut has been made to take ships to and from this lake? How long is the cut? From Gaillard Cut how do ships reach the Pacific ocean?

How long does it take a steamer to pass through the canal? What effect does the canal have upon ocean trade?

SUPPLEMENT

AREA AND POPULATION OF PRINCIPAL COUNTRIES AND COLONIES

NORTH AMERICA 10,050,000 135,000,000

Year		Area	Population
1911	Canada	3,729,665	7,206,643
1915	Costa Rica	23,000	420,179
1915	Cuba	44,215	2,471,531
1915	Guatemala	48,290	2,003,579
1915	Haiti (republic)	10,204	2,500,000
1914	Honduras	44,275	562,000
1910	Mexico	767,000	15,160,369
1915	Newfoundland	42,734	247,710
1915	Nicaragua	49,200	703,540
1912	Panama	32,380	336,742
1914	Salvador	7,225	1,225,835
1913	Santo Domingo (republic)	18,045	708,000
1910	United States	3,622,930	93,402,151†

SOUTH AMERICA 7,500,000 52,000,000

Year		Area	Population
1915	Argentina	1,153,119	7,979,259
1915	Bolivia	514,155	2,889,970
1913	Brazil	3,290,564	24,308,219
1915	British Guiana	89,480	309,938
1915	Chile	289,829	3,596,541
1912	Colombia	440,846	5,472,604
1915	Dutch Guiana	46,060	85,536
1910	Ecuador	116,000	1,500,000
1911	French Guiana	32,000	49,009
1912	Paraguay	165,000	850,000
1908	Peru	695,733	4,500,000
1916	Uruguay	72,153	1,340,000
1915	Venezuela	398,594	2,225,000

EUROPE 3,900,000 465,000,000

Year		Area	Population
1914	Albania	11,000	850,000
1919	Austria	30,000*	6,500,000*
1919	Belgium	11,373	7,593,864*
1917	Bulgaria	47,750*	5,517,700*
1919	Czechoslovakia	60,637*	13,648,768*
1919	Denmark	16,582*	2,940,979*
1911	England	50,874	34,045,290
1915	Finland	125,689	3,300,650
1919	France	212,658	41,126,259*
1919	Germany	178,900*	61,000,000*
1919	Greece	51,000*	7,000,000*
1919	Hungary	46,000*	11,000,000*
1917	Iceland	39,709	92,000
1911	Ireland	32,586	4,390,219
1919	Italy	124,000*	38,000,000*
1919	Jugoslavia	100,000*	13,000,000*
1910	Luxemburg	998	259,891
1917	Netherlands	12,582	6,724,663*
1918	Norway	124,642	2,632,010*
1919	Poland	135,367*	36,234,747*
1911	Portugal	35,490	5,957,985
1919	Rumania	110,000*	15,000,000*
1914	Russia (including Baltic States and Ukraine)	1,742,453	131,342,550
1911	Scotland	30,405	4,760,904
1917	Spain	194,783	20,842,902*
1917	Sweden	173,035	5,800,847*
1916	Switzerland	15,976	3,937,000
1913	Turkey (in Europe)	10,882*	1,891,000*
1911	Wales	7,466	2,025,202

ASIA 16,000,000 820,000,000

Year		Area	Population
1911	Afghanistan	245,000	6,380,500
1918	Arabia (peninsula)	1,200,000	4,500,000*
1919	Armenia	71,990*	2,470,900*
1911	Baluchistan	134,638	834,703
1914	China	3,913,560	325,000,000
1919	Hejaz	96,500*	300,000*
1911	India (British)	1,802,629	315,156,396
1914	Indo-China (French)	256,000	16,990,229
1917	Japan (incl. Korea)	260,738	77,266,793
1917	Korea	84,738	16,998,191
1919	Mesopotamia	143,250*	2,000,000*
1915	Palestine	9,800*	720,000*
1918	Persia	628,000	12,250,000*
1916	Siam	195,000	8,819,686
1915	Siberia and Central Asia	6,198,714	21,632,000
1919	Syria	104,730*	2,675,000*
1919	Turkey (Anatolia)	199,272*	10,000,000*

AFRICA 12,170,000 130,000,000

Year		Area	Population
1916	Abyssinia	350,000	8,000,000
1912	Algeria	343,500	5,563,828
1916	Belgian Kongo	909,654	15,500,000
1911	Cape of Good Hope	276,995	2,564,965
1917	Egypt	350,000	12,710,120*
1916	Liberia	40,000	2,000,000
1916	Madagascar	228,000	3,512,690
1915	Morocco	219,000	3,253,581*
1917	Nigeria	336,000	17,000,000
1917	Sudan	1,582,400	8,997,580
1911	Transvaal	110,426	1,686,212
1911	Tripoli (Libia)	406,000	529,176
1916	Tunis	50,000	1,953,000
1911	Union of South Africa	473,100	5,973,394

AUSTRALIA AND OCEANIA 4,250,000 53,000,000

Year		Area	Population
1917	New South Wales	310,367	1,903,003*
1917	Northern Territory	523,620	4,908
1911	Oceania	1,275,805	46,544,985
1918	Queensland	670,500	705,588*
1918	South Australia	380,070	439,275*
1917	Tasmania	26,215	203,177*
1911	Victoria	87,884	1,315,551
1911	Western Australia	975,920	282,114

POPULATION OF THE PRINCIPAL CITIES OF THE WORLD

NORTH AMERICA

British America

Year		Population
1911	Montreal	470,480
1911	Toronto	376,240
1916	Winnipeg	163,000
1911	Vancouver	100,401
1911	Ottawa	87,062
1911	Hamilton	81,969
1911	Quebec	78,710
1916	Calgary	56,514
1911	Halifax	46,619
1911	London	46,300
1911	St. John	42,511
1911	Victoria	31,660

Central America

Year		Population
1915	Guatemala	90,000
1914	San Salvador	66,800
1915	Leon	62,569
1915	Panama	60,028

Mexico

Year		Population
1910	Mexico	471,066
1910	Guadalajara	118,468

United States

See page iv.

West Indies

Year		Population
1918	Havana	360,517
1918	Port au Prince	120,000
1918	Camaguey	93,057
1918	Cienfuegos	82,092
1918	Santiago	63,041
1914	Kingston	57,379
1918	Matanzas	56,468

SOUTH AMERICA

Argentina

Year		Population
1914	Buenos Aires	1,560,163
1914	Rosario	222,592
1915	Cordoba	135,000
1913	La Plata	106,382

Bolivia

Year		Population
1915	La Paz	100,097
1915	Sucre	29,686

Brazil

Year		Population
1911	Rio de Janeiro	1,128,627
1911	São Paulo	450,000
1911	Bahia	290,000
1913	Para	275,167
1913	Pernambuco	216,484

Chile

Year		Population
1915	Santiago	397,941
1915	Valparaiso	201,507

Colombia

Year		Population
1914	Bogota	139,237
1912	Barranquilla	48,907

Ecuador

Year		Population
1915	Guayaquil	105,000
1915	Quito	70,000

Guiana

Year		Population
1914	Georgetown	53,955
1915	Paramaribo	35,530
1911	Cayenne	13,527

Paraguay

Year		Population
1917	Asuncion	120,000

Peru

Year		Population
1913	Lima	143,500
1913	Arequipa	37,500
1913	Callao	36,000
1913	Cuzco	12,500

Uruguay

Year		Population
1916	Montevideo	378,446

Venezuela

Year		Population
1915	Caracas	75,000
1915	Valencia	54,387
1915	Maracaibo	48,000

EUROPE

Austria

Year		Population
1914	Vienna	2,149,800

Balkan States

Year		Population
1916	Constantinople	1,000,000
1914	Bucharest	345,628
1915	Athens	170,000
1913	Saloniki	160,000
1910	Sofia	102,769
1911	Belgrade	90,890

Belgium

Year		Population
1913	Brussels	663,647
1913	Antwerp	312,884
1913	Liege	170,634
1913	Ghent	167,477

Czechoslovakia

Year		Population
1914	Prague	550,000

Denmark

Year		Population
1916	Copenhagen	506,390

England and Wales

Year		Population
1911	London	7,252,963
1911	Liverpool	746,566
1911	Manchester	714,427
1911	Birmingham	525,960
1911	Sheffield	454,633
1911	Leeds	445,568
1911	Bristol	357,059
1911	Bradford	288,505
1911	Cardiff	182,280

France

Year		Population
1911	Paris	2,888,110
1911	Marseille	550,619
1911	Lyon	523,796
1911	Bordeaux	261,678
1911	Lisle	217,807
1911	Nantes	170,535
1911	Havre	136,159

Germany

Year		Population
1910	Berlin	2,071,257
1910	Hamburg	932,078
1910	Munich	595,053
1910	Leipzig	587,635
1910	Dresden	546,882
1910	Cologne	516,167
1910	Breslau	511,891

Hungary

Year		Population
1910	Budapest	880,371

Ireland

Year		Population
1911	Belfast	385,492
1911	Dublin	309,272
1911	Cork	76,632
1911	Londonderry	40,799

Italy

Year		Population
1915	Naples	697,917
1915	Milan	663,059
1915	Rome	590,960
1914	Trieste	541,500
1915	Turin	451,994
1915	Palermo	345,891
1915	Genoa	300,139
1915	Florence	242,147
1915	Venice	168,038

Netherlands

Year		Population
1915	Amsterdam	609,084
1915	Rotterdam	472,520
1915	The Hague	312,430

Norway and Sweden

Year		Population
1915	Stockholm	386,270
1911	Christiania	241,834
1915	Goteborg	181,500
1911	Bergen	76,867

Portugal

Year		Population
1912	Lisbon	435,359
1912	Oporto	194,009

Russia and bordering lands

Year		Population
1914	Petrograd	2,133,100
1915	Moscow	1,817,100
1915	Warsaw	789,289
1912	Odessa	631,040
1913	Riga	558,000
1915	Helsingfors	176,521

Scotland

Year		Population
1911	Glasgow	784,455
1911	Edinburgh	320,315
1911	Dundee	165,002

Spain

Year		Population
1917	Madrid	648,760
1917	Barcelona	621,419
1917	Valencia	245,871
1917	Seville	164,322
1917	Malaga	140,975

Switzerland

Year		Population
1913	Zurich	205,000
1913	Basel	137,000
1913	Geneva	136,700
1913	Bern	94,700

ASIA

British India

Year		Population
1911	Calcutta	1,222,313
1911	Bombay	979,445
1911	Madras	518,660
1911	Haidarabad	500,623
1911	Singapore	311,985
1911	Rangoon	293,316
1911	Lucknow	259,798
1911	Delhi	232,837
1911	Benares	203,804
1911	Mandalay	138,299

China

Year		Population
1917	Hankow	1,321,284
1917	Peking	1,000,000
1917	Shanghai	1,000,000
1917	Canton	900,000
1917	Tientsin	800,000
1917	Foochow	624,000

East India Islands

Year		Population
1914	Manila	266,943
1917	Batavia	231,463
1915	Soerabaya	157,202

French Indo-China

Year		Population
1915	Hanoi	150,000
1915	Saigon	100,000
1915	Hue	50,000

Japan

Year		Population
1916	Tokyo	2,224,796
1916	Osaka	1,460,218
1916	Kyoto	539,153
1916	Kobe	498,317
1916	Yokohama	428,663
1916	Nagoya	389,272
1913	Seoul	302,686

Siam

Year		Population
1916	Bangkok	628,675

Siberia and Central Asia

Year		Population
1913	Tashkend	272,300
1913	Irkutsk	129,700

Southwest Asia

Year		Population
1916	Smyrna	375,000
1916	Teheran	350,000
1913	Tiflis	327,800
1916	Damascus	252,000
1916	Aleppo	250,000
1913	Baku	237,000
1916	Bagdad	225,000
1916	Tabriz	200,000
1916	Kabul	180,000
1916	Ispahan	85,000
1916	Jerusalem	85,000
1916	Mekka	80,000
1916	Kandahar	40,000
1916	Herat	20,000

AFRICA

Year		Population
1917	Cairo	790,939
1917	Alexandria	444,617
1917	Tunis	277,083
1911	Johannesburg	237,220
1912	Algiers	172,397
1916	Oran	123,086
1912	Fez	105,855
1911	Tripoli	73,000
1911	Cape Town	67,000
1911	Tananarivo	63,115
1914	Port Said	58,804
1916	Tangier	46,000
1911	Freetown	35,000
1910	Zanzibar	35,000
1911	Kimberley	30,000
1916	Monrovia	6,000

AUSTRALIA AND OCEANIA

Year		Population
1915	Sydney	752,500
1915	Melbourne	674,000
1915	Adelaide	205,443
1915	Brisbane	154,011
1916	Auckland	133,712
1916	Wellington	95,235
1918	Honolulu	75,000
1916	Dunedin	68,716
1915	Hobart	39,914

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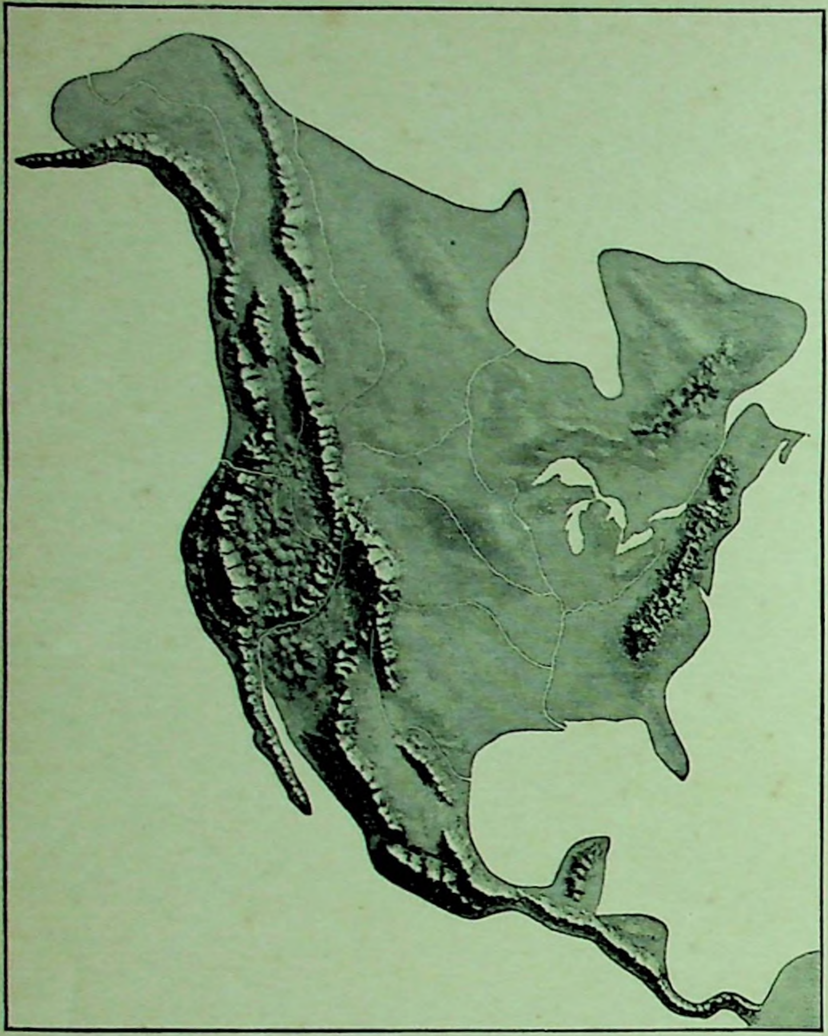
* Estimated. † Exclusive of the island possessions (except Porto Rico and Hawaii) and inclusive of 55,608 persons in the service of the United States stationed abroad. Including the Philippine islands as enumerated by the census of 1903 under the direction of the War Department (7,635,426), and adding estimates for Guam, the Tutuila islands, and the Canal Zone, the total population of the United States and possessions is about 101,100,000. The Virgin islands increase this number by about 25,000.



Guide Maps for Drawing and Modeling the Continents

The relief maps on this page and on the two following pages are intended as guides for drawing and modeling the continents. These maps are purposely made very simple, yet they show the natural features which exert the greatest influence upon the distribution of climates, plants and animals.

Pupils should learn to sketch these maps from memory, without the aid of straight guide-lines, except such as they themselves invent.

The *Teachers' Manual* offers suggestions upon methods of drawing and modeling the continents.

Total Area of the World, 198,000,000 Square Miles

	Square Miles		Square Miles
North America . .	10,050,000	Pacific Ocean . . .	65,688,000
South America . .	7,500,000	Atlantic Ocean . . .	38,640,000
Europe	3,900,000	Indian Ocean . . .	25,500,000
Asia	16,000,000	Antarctic Ocean . .	9,000,000
Africa	12,170,000	Arctic Ocean . . .	4,636,000
Australia	2,975,000	Inland Waters . . .	750,000

Oceania, — Islands east and southeast of Asia . . 1,275,000

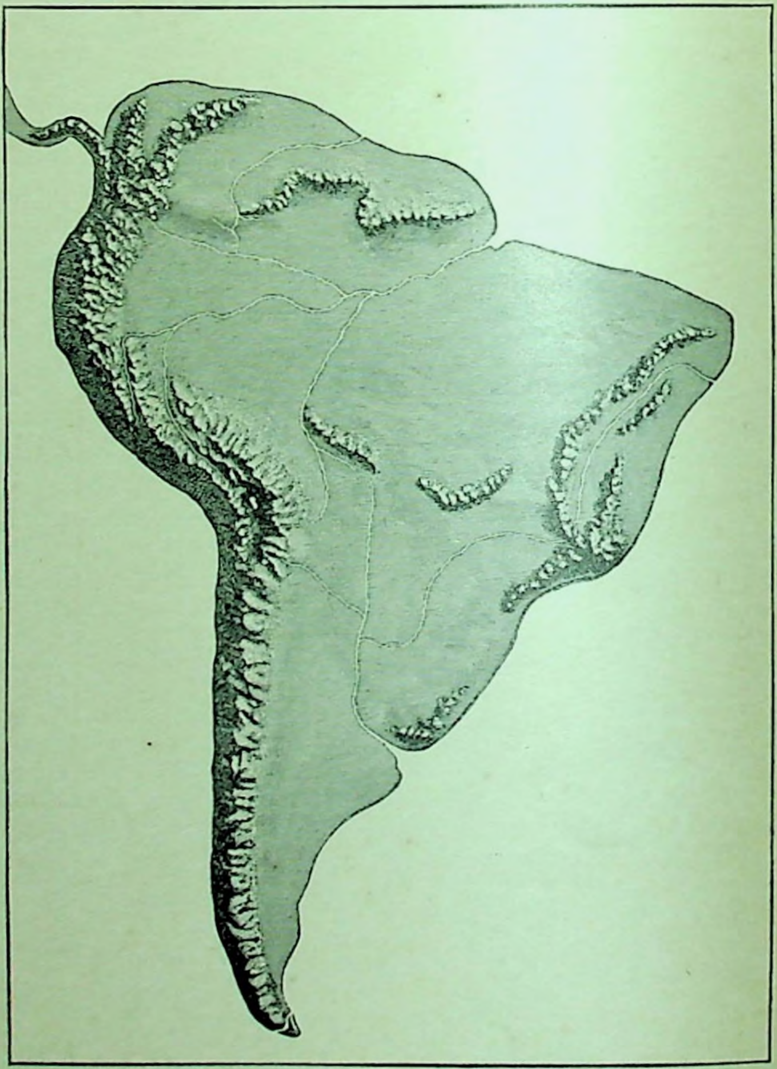
Total Population of the World, 1,660,000,000

Caucasian (white) .	725,000,000	Malay (brown) . . .	50,000,000
Mongolian (yellow) .	655,000,000	Indian (red) . . .	25,000,000
Negro (black) . . .	170,000,000	Mixed Races . . .	35,000,000

Note. In religions the people are grouped about as follows: Christians, 565,000,000; Jews, 13,000,000; Mohammedans, 222,000,000; Buddhists, 138,000,000; Brahmanists, 210,000,000; Confucianists and Taoists, 300,000,000; Shintoists, 25,000,000; Animists, 158,000,000; unclassified, 31,000,000.

Rivers, — Lengths and Drainage Areas [1]

Name	System	Length in Miles	Basin Area Sq. Miles
NORTH AMERICA			
Colorado	Pacific	2,000	230,000
Columbia	Pacific	1,400	220,000
Mackenzie	Arctic	2,400	440,000
Missouri-Mississippi . .	Atlantic	4,200	1,200,000
Nelson	Atlantic	1,800	355,000
Rio Grande	Atlantic	1,800	180,000
St. Lawrence	Atlantic	1,030	300,000
Yukon	Pacific	2,050	440,000
SOUTH AMERICA			
Amazon	Atlantic	3,300	2,500,000
Plata	Atlantic	2,950	1,250,000
Orinoco	Atlantic	1,500	350,000
San Francisco . . .	Atlantic	1,680	190,000
EUROPE			
Danube	Atlantic	1,800	300,000
Dnieper	Atlantic	1,230	175,000
Dwina	Arctic	700	140,000
Elbe	Atlantic	550	42,000
Rhine	Atlantic	960	65,000
Rhone	Atlantic	550	33,000
Seine	Atlantic	497	23,000
Thames	Atlantic	215	6,000
Volga	Interior	2,300	550,000
ASIA			
Amur	Pacific	1,500	600,000
Brahmaputra	Indian	2,000	425,000
Ganges	Indian	1,500	400,000
Hwang ho	Pacific	2,700	540,000
Indus	Indian	2,000	320,000
Lena	Arctic	2,550	600,000
Ob	Arctic	2,500	920,000
Yangtze	Pacific	3,000	700,000
AFRICA			
Kongo	Atlantic	2,900	1,500,000
Niger	Atlantic	3,500	600,000
Nile	Atlantic	3,700	1,600,000
Zambezi	Indian	1,800	440,000



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[1] The lengths of rivers, and the areas of their basins, are in all cases estimates. Those of Africa are least known. The basin of the Murray river, in Australia, is thought to contain about 500,000 square miles. The area of the Yukon basin cannot now be closely estimated.

Indians in United States, exclusive of Alaska, 1911

Alabama	909
Arizona	29,201
Arkansas	460
California	16,371
Colorado	1,482
Connecticut	152
Delaware	5
District of Columbia	68
Florida	74
Georgia	95
Idaho	3,488
Illinois	188
Indiana	279
Iowa	471
Kansas	2,444
Kentucky	234
Louisiana	780
Maine	892
Maryland	55
Massachusetts	688
Michigan	7,519
Minnesota	9,053
Mississippi	1,253
Missouri	313
Montana	10,745
Nebraska	3,502
Nevada	5,240
New Hampshire	34
New Jersey	168
New Mexico	20,573
New York	6,046
North Carolina	7,851
North Dakota	6,486
Ohio	127
Oklahoma	74,825
Oregon	5,090
Pennsylvania	1,503
Rhode Island	284
South Carolina	331
South Dakota	19,137
Tennessee	216
Texas	702
Utah	3,123
Vermont	26
Virginia	539
Washington	10,997
West Virginia	36
Wisconsin	10,142
Wyoming	1,486
Total	265,683

Heights of Principal Mountains

NORTH AMERICA

Name	Location	Height in feet
Mt. McKinley	Alaska	20,300
Mt. Logan	Canada	19,539
Orizaba	Mexico	18,314
Mt. St. Elias	Canada	18,024
Popocatepetl	Mexico	17,748
Mt. Wrangell	Alaska	17,500
Mt. Whitney	California	14,501
Mt. Elbert	Colorado	14,402
Blanca peak	Colorado	14,390
Mt. Shasta	California	14,380
Mt. Rainier	Washington	14,363
Longs peak	Colorado	14,271
Mt. Holy Cross	Colorado	14,170
Pikes peak	Colorado	14,108
Gannett peak	Wyoming	13,785
Mt. Hood	Oregon	11,225
Mt. Mitchell	North Carolina	6,711
Mt. Washington	New Hampshire	6,293
Mt. Marcy	New York	5,344
Mt. Katahdin	Maine	5,200
Jorullo	Mexico	4,265

SOUTH AMERICA

Aconcagua	Chile	23,083
Chimborazo	Ecuador	20,498
Arequipa	Peru	20,320
Cotopaxi	Ecuador	18,880
Tolima	Colombia	18,069
Roraima	Venezuela	7,874
Itacolumi	Brazil	5,740
Itambe	Brazil	4,300

EUROPE

Elburz	Russia	18,526
Mt. Blanc	France	15,780
Monte Rosa	Italy	15,208
Olympus	Turkey	9,745
Etna	Sicily	9,652
Ymesfield	Norway	8,543
Ben-Nevis	Scotland	4,368
Vesuvius	Italy	4,260
Snowdon	Wales	3,571
Stromboli	Lipari Islands	3,090

ASIA

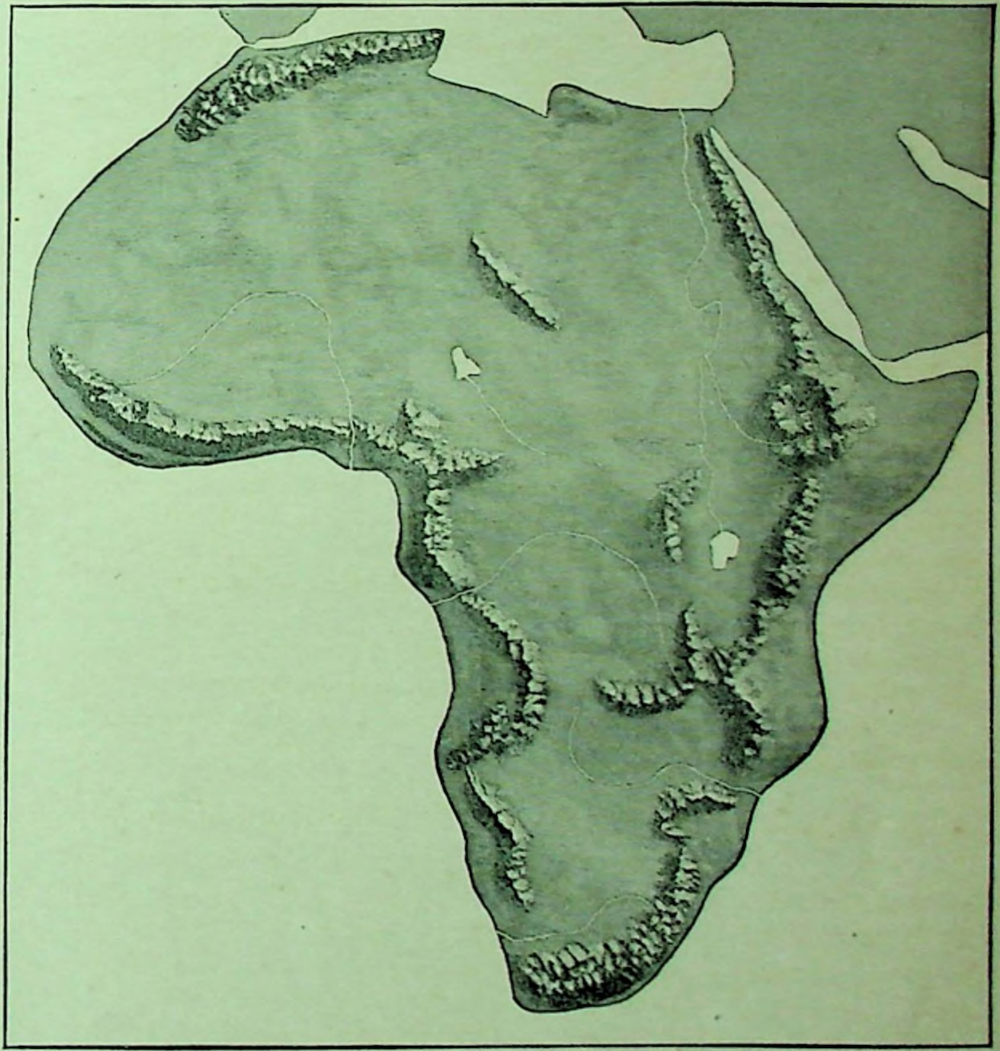
Mt. Everest	India	29,002
Dapsang	Tibet	28,278
Kanchanjanga	India	28,156
Demavend	Persia	18,500
Ararat	Turkey	17,260
Mt. Hermon	Palestine	11,000
Mt. Sinai	Turkey	8,593

AFRICA

Kilimanjaro	East Africa	19,600
Kenia	East Africa	19,500
Tenerife	Canary Islands	12,000
Mt. Miltsin	Morocco	11,400
Peak of Pico	Azores	7,013

AUSTRALIA AND OCEANIA

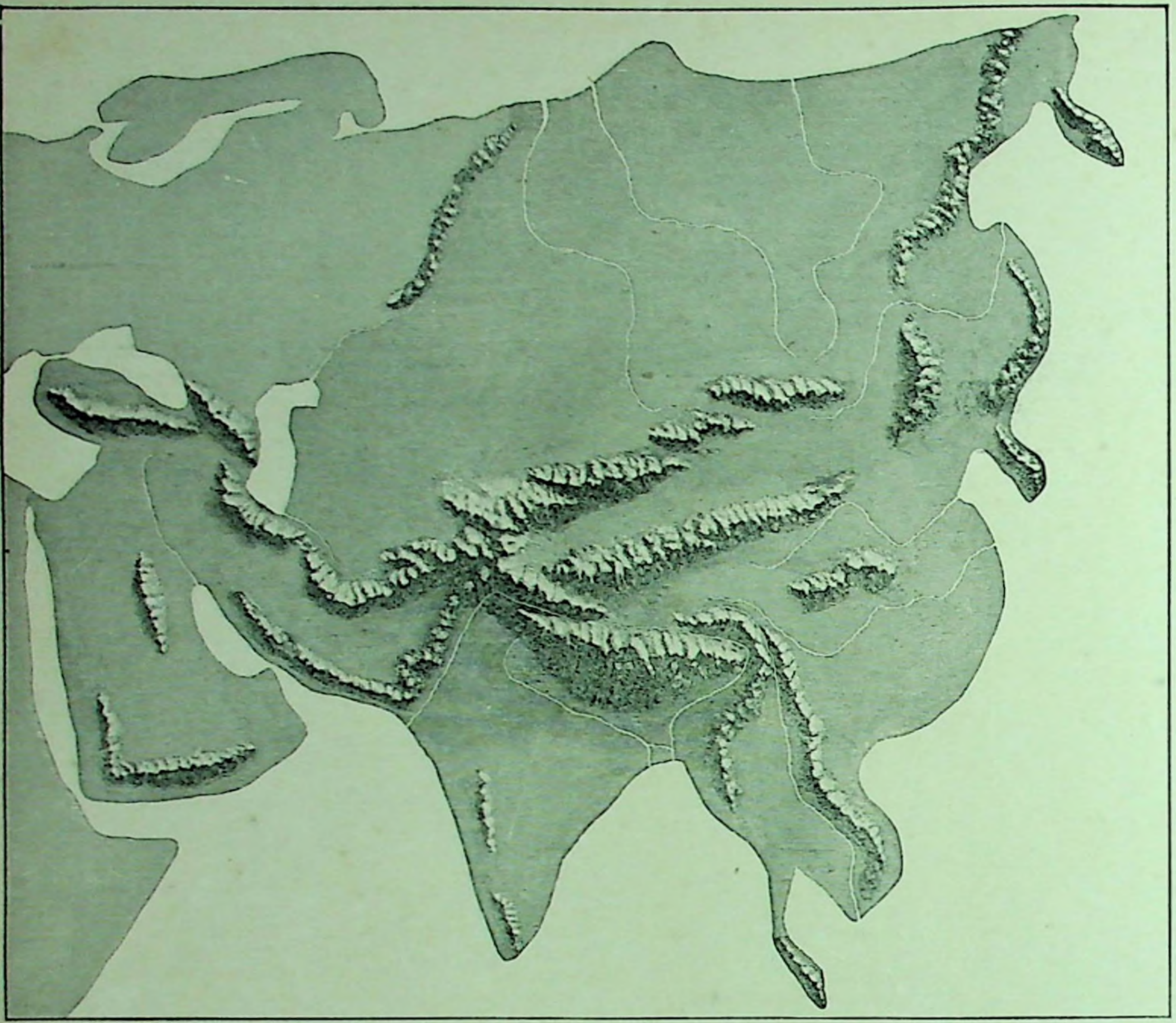
Mauna Loa	Hawaiian Islands	13,600
Mt. Kosciusco	Australia	7,176
Kilauea	Hawaiian Islands	4,040



Principal Lakes of the World

Name	Area in Sq. Miles	Elevation in Feet	Depth in Feet
Aral Sea	26,000	48	. . .
Caspian Sea	170,000	— 84	3,000
Dead Sea	320	— 1,312	700
Great Salt Lake	2,600	4,200	60
Lake Baikal	12,500	1,600	4,500
Lake Chapala	1,300	7,000	. . .
Lake Erie	7,750	573	210
Lake Huron	20,000	581	700
Lake Ladoga	7,000	55	730
Lake Michigan	22,000	581	870
Lake Nicaragua	3,650	130	240
Lake Ontario	6,950	247	730
Lake Superior	31,500	602	1,108
Lake Titicaca	4,000	12,874	. . .
Lake Victoria	40,000	3,300	. . .

AREA AND POPULATION OF STATES



Leading Cities of the United States

Cities	Population (1910)
New York, N. Y.	4,766,883
Chicago, Ill.	2,185,283
Philadelphia, Pa.	1,549,008
St. Louis, Mo.	687,029
Boston, Mass.	670,585
Cleveland, Ohio	560,663
Baltimore, Md.	558,485
Pittsburgh, Pa.	533,905
Detroit, Mich.	465,766
Buffalo, N. Y.	423,715
San Francisco, Cal.	416,912
Milwaukee, Wis.	373,857
Cincinnati, Ohio	363,591
Newark, N. J.	347,469
New Orleans, La.	339,075
Washington, D. C.	331,069
Los Angeles, Cal.	319,198
Minneapolis, Minn.	301,408
Jersey City, N. J.	267,779
Kansas City, Mo.	248,381
Seattle, Wash.	237,194
Indianapolis, Ind.	233,650
Providence, R. I.	224,326
Louisville, Ky.	223,928
Rochester, N. Y.	218,149
St. Paul, Minn.	214,744
Denver, Colo.	213,381
Portland, Ore.	207,214
Columbus, Ohio	181,511
Toledo, Ohio	168,497
Atlanta, Ga.	154,839
Oakland, Cal.	150,174
Worcester, Mass.	145,986
Syracuse, N. Y.	137,249
New Haven, Conn.	133,605
Birmingham, Ala.	132,685
Memphis, Tenn.	131,105
Scranton, Pa.	129,867
Richmond, Va.	127,628
Paterson, N. J.	125,600
Omaha, Nebr.	124,096
Fall River, Mass.	119,295
Dayton, Ohio	116,577
Grand Rapids, Mich.	112,571
Nashville, Tenn.	110,364
Lowell, Mass.	106,294
Cambridge, Mass.	104,839
Spokane, Wash.	104,402
Bridgeport, Conn.	102,054
Albany, N. Y.	100,253

The United States

States and Territories	Area in Square Miles	Population (1910)
Alabama	51,998	2,138,093
Alaska	590,884	64,356
Arizona	113,956	204,354
Arkansas	53,335	1,574,449
California	158,297	2,377,549
Canal Zone[1]	436	50,000[2]
Colorado	103,948	799,024
Connecticut	4,965	1,114,756
Delaware	2,370	202,322
District of Columbia	70	331,069
Florida	58,666	752,619
Georgia	59,265	2,609,121
Guam[1]	210[2]	9,000[2]
Hawaii	6,449	191,909
Idaho	83,888	325,594
Illinois	56,665	5,638,591
Indiana	36,354	2,700,876
Iowa	56,147	2,224,771
Kansas	82,158	1,690,949
Kentucky	40,598	2,289,905
Louisiana	48,506	1,656,388
Maine	33,040	742,371
Maryland	12,327	1,295,346
Massachusetts	8,266	3,366,416
Michigan	57,980	2,810,173
Minnesota	84,682	2,075,708
Mississippi	46,865	1,797,114
Missouri	69,420	3,293,335
Montana	146,997	376,053
Nebraska	77,520	1,192,214
Nevada	110,690	81,875
New Hampshire	9,341	430,572
New Jersey	8,224	2,537,167
New Mexico	122,634	327,301
New York	49,204	9,113,614
North Carolina	52,426	2,206,287
North Dakota	70,837	577,056
Ohio	41,040	4,767,121
Oklahoma	70,057	1,657,155
Oregon	96,699	672,765
Pennsylvania	45,126	7,665,111
Philippine Islands[1]	115,026	7,635,426[3]
Porto Rico	3,435[2]	1,118,012
Rhode Island	1,248	542,610
South Carolina	30,989	1,515,400
South Dakota	77,615	583,888
Tennessee	42,022	2,184,789
Texas	265,896	3,896,542
Tutuila Islands[1]	77[2]	6,100[2]
Utah	84,990	373,351
Vermont	9,564	355,956
Virginia	42,627	2,061,612
Washington	69,127	1,141,990
West Virginia	24,170	1,221,119
Wisconsin	56,066	2,333,860
Wyoming	97,914	145,965

* * *

States having the Largest Negro Population

States	Population (1910)
Georgia	1,176,987
Mississippi	1,009,487
Alabama	908,282
South Carolina	835,843
Louisiana	713,874
Virginia	671,096
North Carolina	697,843
Texas	690,040
Tennessee	473,088
Arkansas	442,891

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[1] Not included in the National Census of 1910.

[2] Estimated.

[3] Census of 1903 taken under the direction of the War Department.

Cities and Towns of the United States

Having a Population of over 13,000 (Census of 1910)

Aberdeen, Wash.	13,660
Adams, Mass.	13,026
Akron, O.	69,067
Alameda, Cal.	23,383
Albany, N.Y.	100,253
Alexandria, Va.	15,329
Allentown, Pa.	51,913
Alliance, O.	15,083
Alton, Ill.	17,528
Altoona, Pa.	52,127
Amsterdam, N.Y.	31,267
Anderson, Ind.	22,476
Ann Arbor, Mich.	14,817
Ansonia, Conn.	15,152
Appleton, Wis.	16,773
Asheville, N.C.	18,762
Ashtabula, O.	18,266
Atchison, Kan.	16,429
Athens, Ga.	14,913
Atlanta, Ga.	154,839
Atlantic City, N.J.	46,150
Attleboro, Mass.	16,215
Auburn, Me.	15,064
Auburn, N.Y.	34,668
Augusta, Ga.	41,040
Augusta, Me.	13,211
Aurora, Ill.	29,807
Austin, Tex.	29,860
Baltimore, Md.	558,485
Bangor, Me.	24,803
Baton Rouge, La.	14,897
Battle Creek, Mich.	25,267
Bay City, Mich.	45,166
Bayonne, N.J.	55,545
Beaumont, Tex.	20,640
Belleville, Ill.	21,122
Bellingham, Wash.	24,298
Beloit, Wis.	15,125
Berkeley, Cal.	40,434
Beverly, Mass.	18,650
Biddeford, Me.	17,079
Binghamton, N.Y.	48,443
Birmingham, Ala.	132,685
Bloomfield, N.J.	15,070
Bloomington, Ill.	25,768
Boise, Ida.	17,358
Boston, Mass.	670,585
Braddock, Pa.	19,357
Bradford, Pa.	14,544
Bridgeport, Conn.	102,054
Bridgeton, N.J.	14,209
Bristol, Conn.	13,502
Brockton, Mass.	56,878
Brookline, Mass.	27,792
Buffalo, N.Y.	423,715
Burlington, Ia.	24,324
Burlington, Vt.	20,468
Butler, Pa.	20,728
Butte, Mont.	39,165
Cairo, Ill.	14,548
Cambridge, Mass.	104,839
Camden, N.J.	94,538
Canton, O.	50,217
Carbondale, Pa.	17,040
Cedar Rapids, Ia.	32,811
Central Falls, R.I.	22,754
Charleston, S.C.	58,833
Charleston, W.Va.	22,996
Charlotte, N.C.	34,014
Chattanooga, Tenn.	44,604
Chelsea, Mass.	32,452
Chester, Pa.	38,537
Chicago, Ill.	2,185,283
Chicago Heights, Ill.	14,525
Chicopee, Mass.	25,401
Chillicothe, O.	14,508
Cicero, Ill.	14,557
Cincinnati, O.	363,591
Cleveland, O.	560,663
Clinton, Ia.	25,577
Clinton, Mass.	13,075
Cohoes, N.Y.	24,709
Colorado Springs, Col.	29,078
Columbia, S.C.	26,319
Columbus, Ga.	20,554
Columbus, O.	181,511
Concord, N.H.	21,497
Corning, N.Y.	13,730
Council Bluffs, Ia.	29,292
Covington, Ky.	53,270
Cranston, R.I.	21,107
Cumberland, Md.	21,839
Dallas, Tex.	92,104
Danbury, Conn.	23,502
Danville, Ill.	27,871
Danville, Va.	19,020
Davenport, Ia.	43,028
Dayton, O.	116,577
Decatur, Ill.	31,140
Denison, Tex.	13,632
Denver, Col.	213,381
Des Moines, Ia.	86,368
Detroit, Mich.	465,766
Dover, N.H.	13,247
Dubuque, Ia.	38,494
Duluth, Minn.	78,466
Dunkirk, N.Y.	17,221
Dunmore, Pa.	17,615
Duquesne, Pa.	15,727
Durham, N.C.	18,241
East Chicago, Ind.	19,098
East Liverpool, O.	20,387
East Orange, N.J.	34,371
East Providence, R.I.	15,808
East St. Louis, Ill.	58,547
Easton, Pa.	28,523
Eau Claire, Wis.	18,310
Elgin, Ill.	25,976
Elizabeth, N.J.	73,409
Elkhart, Ind.	19,282
Elmira, N.Y.	37,176
El Paso, Tex.	39,279
Elyria, O.	14,825
Enid, Okla.	13,799
Erie, Pa.	66,525
Escanaba, Mich.	13,194
Evanston, Ill.	24,978
Evansville, Ind.	69,647
Everett, Mass.	33,484
Everett, Wash.	24,814
Fall River, Mass.	119,295
Fargo, N.D.	14,331
Findlay, O.	14,858
Fitchburg, Mass.	37,826
Flint, Mich.	38,550
Fond du Lac, Wis.	18,797
Fort Dodge, Ia.	15,543
Fort Smith, Ark.	23,975
Fort Wayne, Ind.	63,933
Fort Worth, Tex.	73,312
Freeport, Ill.	17,567
Fresno, Cal.	24,892
Galesburg, Ill.	22,089
Galveston, Tex.	36,981
Gardner, Mass.	14,699
Gary, Ind.	16,802
Glens Falls, N.Y.	15,243
Gloucester, Mass.	24,398
Gloversville, N.Y.	20,642
Grand Rapids, Mich.	112,571
Great Falls, Mont.	13,948
Green Bay, Wis.	25,236
Greensboro, N.C.	15,895
Greensburg, Pa.	13,012
Greenville, S.C.	15,741
Greenwich, Conn.	16,463
Hackensack, N.J.	14,050
Hagerstown, Md.	16,507
Hamilton, O.	35,279
Hammond, Ind.	20,925
Hannibal, Mo.	18,341
Harrisburg, Pa.	64,186
Harrison, N.J.	14,498
Hartford, Conn.	98,915
Haverhill, Mass.	44,115
Hazleton, Pa.	25,452
Hoboken, N.J.	70,324
Holyoke, Mass.	57,730
Homestead, Pa.	18,713
Honolulu, Hawaii	52,183
Hornell, N.Y.	13,617
Hot Springs, Ark.	14,434
Houston, Tex.	78,800
Huntington, W.Va.	31,161
Hutchinson, Kan.	16,364
Hyde Park, Mass.	15,507
Indianapolis, Ind.	233,650
Ironton, O.	13,147
Ithaca, N.Y.	14,802
Jackson, Mich.	31,433
Jackson, Miss.	21,262
Jackson, Tenn.	15,779
Jacksonville, Fla.	57,699
Jacksonville, Ill.	15,326
Jamestown, N.Y.	31,297
Janesville, Wis.	13,894
Jersey City, N.J.	267,779
Johnstown, Pa.	55,482
Joliet, Ill.	34,670
Joplin, Mo.	32,073
Kalamazoo, Mich.	39,437
Kankakee, Ill.	13,986
Kansas City, Kan.	82,331
Kansas City, Mo.	248,381
Kearney, N.J.	18,659
Kenosha, Wis.	21,371
Keokuk, Ia.	14,008
Key West, Fla.	19,945
Kingston, N.Y.	25,908
Knoxville, Tenn.	36,346
Kokomo, Ind.	17,010
Lackawanna, N.Y.	14,549
La Crosse, Wis.	30,417
Lafayette, Ind.	20,081
Lakewood, O.	15,181
Lancaster, O.	13,093
Lancaster, Pa.	47,227
Lansing, Mich.	31,229
Laredo, Tex.	14,855
Lawrence, Mass.	85,892
Leavenworth, Kan.	19,363
Lebanon, Pa.	19,240
Leominster, Mass.	17,580
Lewiston, Me.	26,247
Lexington, Ky.	35,099
Lima, O.	30,508
Lincoln, Neb.	43,973
Little Rock, Ark.	45,941
Lockport, N.Y.	17,970
Logansport, Ind.	19,050
Long Beach, Cal.	17,809
Long Branch, N.J.	13,298
Lorain, O.	28,883
Los Angeles, Cal.	319,198
Louisville, Ky.	223,928
Lowell, Mass.	106,294
Lynchburg, Va.	29,494
Lynn, Mass.	89,336
McKeesport, Pa.	42,694
McKees Rocks, Pa.	14,702
Macon, Ga.	40,665
Madison, Wis.	25,531
Mahanoy, Pa.	15,936
Malden, Mass.	44,404
Manchester, Conn.	13,641
Manchester, N.H.	70,063
Manila, P.I.	219,928
Manitowoc, Wis.	13,027
Mansfield, O.	20,768
Marinette, Wis.	14,610
Marion, Ind.	19,359
Marion, O.	18,232
Marlboro, Mass.	14,579
Marshalltown, Ia.	13,374
Massillon, O.	13,879
Mayaguez, P.R.	16,591
Medford, Mass.	23,150
Melrose, Mass.	15,715
Memphis, Tenn.	131,105
Meriden, Conn.	32,066
Meridian, Miss.	23,285
Michigan City, Ind.	19,027
Middletown, Conn.	20,749
Middletown, N.Y.	15,313
Middletown, O.	13,152
Milford, Mass.	13,055
Milwaukee, Wis.	373,857
Minneapolis, Minn.	301,408
Mobile, Ala.	51,521
Moline, Ill.	24,199
Montclair, N.J.	21,550
Montgomery, Ala.	38,136
Mount Vernon, N.Y.	30,919
Mt. Carmel, Pa.	17,532
Muncie, Ind.	24,005
Muscatine, Ia.	16,178
Muskegon, Mich.	24,062
Muskogee, Okla.	25,278
Nanticoke, Pa.	18,877
Nashua, N.H.	26,005
Nashville, Tenn.	110,364
New Albany, Ind.	20,629
New Bedford, Mass.	96,652
New Britain, Conn.	43,916
New Brunswick, N.J.	23,388
New Haven, Conn.	133,605
New London, Conn.	19,659
New Orleans, La.	339,075
New Rochelle, N.Y.	28,867
New York, N.Y.	4,766,883
Newark, N.J.	347,469
Newark, O.	25,404
Newburg, N.Y.	27,805
Newburyport, Mass.	14,949
Newcastle, Pa.	36,280
Newport, Ky.	30,309
Newport, R.I.	27,149
Newport News, Va.	20,205
Newton, Mass.	39,806
Niagara Falls, N.Y.	30,445
Norfolk, Va.	67,452
Norristown, Pa.	27,875
North Adams, Mass.	22,019
North Yakima, Wash.	14,082
Northampton, Mass.	19,431
Norwalk, Conn.	24,211
Norwich, Conn.	28,219
Norwood, O.	16,185
Oak Park, Ill.	19,444
Oakland, Cal.	150,174
Ogden, Utah	25,580
Ogdensburg, N.Y.	15,933
Oil City, Pa.	15,657
Oklahoma City, Okla.	64,205
Olean, N.Y.	14,743
Omaha, Neb.	124,096
Orange, N.J.	29,630
Oshkosh, Wis.	33,062
Oswego, N.Y.	23,368
Ottumwa, Ia.	22,012
Owensboro, Ky.	16,011
Paducah, Ky.	22,760
Parkersburg, W.Va.	17,842
Pasadena, Cal.	30,291
Passaic, N.J.	54,773
Paterson, N.J.	125,600
Pawtucket, R.I.	51,622
Peabody, Mass.	15,721
Peekskill, N.Y.	15,245
Pensacola, Fla.	22,982
Peoria, Ill.	66,950
Perth Amboy, N.J.	32,121
Petersburg, Va.	24,127
Philadelphia, Pa.	1,549,008
Phillipsburg, N.J.	13,903
Pine Bluff, Ark.	15,102
Piqua, O.	13,388
Pittsburg, Kan.	14,755
Pittsburgh, Pa.	533,905
Pittsfield, Mass.	32,121
Pittston, Pa.	16,267
Plainfield, N.J.	20,550
Plymouth, Pa.	16,996
Ponce, P.R.	35,027
Pontiac, Mich.	14,532
Port Huron, Mich.	18,863
Portland, Me.	58,571
Portland, Ore.	207,214
Portsmouth, O.	23,481
Portsmouth, Va.	33,190
Pottstown, Pa.	15,599
Pottsville, Pa.	20,236
Poughkeepsie, N.Y.	27,936
Providence, R.I.	224,326
Pueblo, Col.	44,395
Quincy, Ill.	36,587
Quincy, Mass.	32,642
Racine, Wis.	38,002
Raleigh, N.C.	19,218
Reading, Pa.	96,071
Revere, Mass.	18,219
Richmond, Ind.	22,324
Richmond, Va.	127,628
Riverside, Cal.	15,212
Roanoke, Va.	34,874
Rochester, N.Y.	218,149
Rock Island, Ill.	24,335
Rockford, Ill.	45,401
Rome, N.Y.	20,497
Rutland, Vt.	13,546
Sacramento, Cal.	44,696
Saginaw, Mich.	50,510
St. Joseph, Mo.	77,403
St. Louis, Mo.	687,029
St. Paul, Minn.	214,744
Salem, Mass.	43,697
Salem, Ore.	14,094
Salt Lake City, Utah	92,777
San Antonio, Tex.	96,614
San Diego, Cal.	39,578
San Francisco, Cal.	416,912
San Jose, Cal.	28,946
San Juan, P.R.	48,716
Sandusky, O.	19,989
Savannah, Ga.	65,064
Schenectady, N.Y.	72,826
Scranton, Pa.	129,867
Seattle, Wash.	237,194
Sedalia, Mo.	17,822
Selma, Ala.	13,649
Shamokin, Pa.	19,588
Sharon, Pa.	15,270
Sheboygan, Wis.	26,398
Shenandoah, Pa.	25,774
Shreveport, La.	28,015
Sioux City, Ia.	47,828
Sioux Falls, S.D.	14,094
Somerville, Mass.	77,236
South Bend, Ind.	53,684
South Bethlehem, Pa.	19,973
South Omaha, Neb.	26,259
Spartanburg, S.C.	17,517
Spokane, Wash.	104,402
Springfield, Ill.	51,678
Springfield, Mass.	88,926
Springfield, Mo.	35,201
Springfield, O.	46,921
Stamford, Conn.	28,836
Steelton, Pa.	14,246
Steubenville, O.	22,391
Stockton, Cal.	23,253
Streator, Ill.	14,253
Sunbury, Pa.	13,770
Superior, Wis.	40,384
Syracuse, N.Y.	137,249
Tacoma, Wash.	83,743
Tampa, Fla.	37,782
Taunton, Mass.	34,259
Terre Haute, Ind.	58,157
Toledo, O.	168,497
Topeka, Kan.	43,684
Torrington, Conn.	16,840
Trenton, N.J.	96,815
Troy, N.Y.	76,813
Tucson, Ariz.	13,193
Tulsa, Okla.	18,182
Union, N.J.	21,023
Uniontown, Pa.	13,344
Utica, N.Y.	74,419
Vicksburg, Miss.	20,814
Vincennes, Ind.	14,895
Waco, Tex.	26,425
Walla Walla, Wash.	19,364
Waltham, Mass.	27,834
Warwick, R.I.	26,629
Washington, D.C.	331,069
Washington, Pa.	18,778
Waterbury, Conn.	73,141
Waterloo, Ia.	26,693
Watertown, N.Y.	26,730
Watervliet, N.Y.	15,074
Waukegan, Ill.	16,069
Wausau, Wis.	16,560
Waycross, Ga.	14,485
West Hoboken, N.J.	35,403
West New York, N.J.	13,560
Westfield, Mass.	16,044
Wheeling, W.Va.	41,641
White Plains, N.Y.	15,949
Wichita, Kan.	52,450
Wilkes-Barre, Pa.	67,105
Wilkinsburg, Pa.	18,924
Williamsport, Pa.	31,860
Wilmington, Del.	87,411
Wilmington, N.C.	25,748
Winona, Minn.	18,583
Winston-Salem, N.C.	22,700
Woburn, Mass.	15,308
Woonsocket, R.I.	38,125
Worcester, Mass.	145,986
Yonkers, N.Y.	79,803
York, Pa.	44,750
Youngstown, O.	79,066
Zanesville, O.	28,026

PRONOUNCING VOCABULARY

Key: āle, ăt, câre, ärm, finạl, a̤ll; ēve, ĕnd, hẽr, recẹnt; īce, ĭll, admịral; ōld, ŏn, fôr, anchọr; ūse, ŭp, fûr, awfụl; fo͞od, fo͝ot; ch *as in* chop; g *as in* go; ng *as in* sing; ṉ *as in* ink; th *as in* thin; t͟h *as in* the; ñ *as* ny *in* canyon; oi *as in* oil; ow *as in* cow; ɴ *nearly like* ng *in* sing (*French nasal*).

Abaco, ă′bä-kō.
Aberdeen, ăb-ẹr-dēn′.
Abomey, ăb-ō-mā′.
Abyssinia, ăb-ĭs-sĭn′ĭ-ạ.
Acapulco, ä-kä-po͞ol′kō.
Acaray, ä-kär′ä.
Aconcagua, ä-kōn-kä′gwä.
Acropolis, ă-krŏp′ō-lĭs.
Adelaide, ăd′ẹ-lād.
Aden, ā′dẹn.
Adige, ăd′ĭ-jē.
Adirondack, ăd-ị-rŏn′dạk.
Adrian, ā′drĭ-ạn.
Adrianople, ăd-rĭ-ạn-ō′pl.
Adriatic, ăd-rē-ăt′ĭk.
Ægean, ē-jē′ạn.
Afghanistan, ăf-găn-ịs-tän′.
Africa, ăf′rĭ-kạ.
Agana, ä-gän′yä.
Aguadilla, ä-gwä-dē′yä.
Aix-la-Chapelle, āks′-lä-shä-pĕl′.
Ajaccio, ä-yät′chō.
Akron, ăk′rọn.
Alabama, ăl-ạ-bä′mạ.
Alameda, ä-lä-mā′dạ.
Alamo, ä′lä-mō.
Alaska, ā-lăs′kạ.
Albania, ăl-bā′nĭ-ạ.
Albay, äl-bī′.
Albemarle, ăl′bẹ-märl.
Alberta, ăl-bẽrt′ạ.
Albuquerque, äl-bo͞o-kăr′kā.
Alderney, a̤l′dẽr-nĭ.
Aleppo, ä-lĕp′ō.
Aleutian, ā-lū′shĭ-ạn.
Alexandria, ăl-ĕgs-ăn′drĭ-ạ.
Algeria, ăl-jē′rĭ-ä.
Algiers, ăl-jērz′.
Alhambra, ăl-hăm′brạ.
Allegheny, ăl′ẹ-gā-nĭ.
Alpena, ăl-pē′nạ.
Alsace-Lorraine, ăl-säs′-lō-rān′.
Altai, äl-tī′.
Altamaha, a̤l-tạ-mạ-ha̤′.
Altoona, ăl-to͞o′nạ.
Amadeus, ăm-ạ-dē′ŭs.
Ameer, ā-mēr′.
Amiens, ä′mĭ-ăɴ.
Amur, ä-mo͞or′.
Anam, â-năm′.
Anatolia, ăn-ạ-tō′lĭ-ạ.
Andes, ăn′dēz.
Andorra, än-dōr′rä.
Androscoggin, ăn-drọs-cŏg′ĭn.
Angers, ŏɴ-zhā′.
Anglesey, ăn′gl-sē.
Annapolis, ăn-năp′ō-lĭs.
Anniston, ăn′ĭs-tọn.
Antarctic, ăn-tärk′tĭk.
Anticosti, ăn-tĭ-kŏs′tĭ.
Antigua, än-tē′gạ.
Antilles, ăn-tĭl′lēz *or* ŏɴ-tēl′.
Antofagasta, än-tō-fä-gäs′tä.
Antwerp, ănt′wẽrp.
Apache, ä-pä′chā.
Apalachee, ăp-ạ-lăch′ē.
Apalachicola, ä-pạ-lăch-ĭ-kō′lä.
Apari, ä-pä-rē′.
Apennines, ăp′ẹn-nĭnz.
Apia, ä′pē-ä.
Appalachian, ăp-pạ-lā′chĭ-ạn.
Appomattox, ăp-pō-măt′tọks.
Arabia, ā-rā′bĭ-ạ.
Arabic, ăr′ā-bĭk.
Aral, ăr′ạl.
Ararat, ăr′ạ-răt.
Archangel, ärk-ān′jĕl.
Archipelago, är-kĭ-pĕl′ā-gō.
Arctic, ärk′tĭk.
Ardennes, är-dĕn′.
Arecibo, ä-rā-sē′bō.
Arequipa, ä-rā-kē′pä.
Argentina, är-jĕn-tē′nạ.
Arica, ä-rē′kä.
Arkansas, är′kạn-sa̤.
Armenia, är-mē′nĭ-ạ.
Arnhem, ärn′hĕm.
Arno, är′nō.
Aryan, är′yạn.
Asben, äs-bĕn′.
Asheville, ăsh′vĭl.
Asia, ā′shĭ-ạ.
Asiatic, ā-shĭ-ăt′ĭk.
Assiniboine, ăs-sĭn′ĭ-boin.
Assouan, äs-swän′.
Astoria, ăs-tō′rĭ-ạ.
Astrakhan, äs-trä-kän′.
Asuncion, ä-so͞on-sē-ōn′.
Atacama, ä-tä-kä′mä.
Atbara, ät-bä′rä.
Atchafalaya, ăch-ạf-ạ-lī′ạ.
Atchison, ăch′ĭ-sọn.
Athabaska, ăth-ạ-băs′kạ.
Athens, ăth′ĕnz.
Atlanta, ăt-lăn′tạ.
Atlantic, ăt-lăn′tĭk.
Atoll, ă-tŏl′.
Auburn, a̤′bûrn.
Auckland, a̤k′lạnd.
Augusta, a̤-gŭs′tạ.
Aurora, a̤-rō′rạ.
Au Sable, a̤ sä′bl.
Austin, a̤s′tĭn.
Australia, a̤s-trā′lĭ-ạ.
Australis, a̤s-trā′lĭs.
Austria, a̤s′trĭ-ạ.
Avon, ā′vọn.
Azerbaijan, ä′zẽr-bī-jän′.
Azores, ạ-zōrz′.
Azov, ä-zŏf′.

Bagdad, băg-däd′.
Bahama, bạ-hā′mạ.
Bahia, bä-ē′ä.
Baikal, bī′käl.
Baku, bä-ko͞o′.
Balabac, bä-lä-bäc′.
Balanga, bä-län′gä.
Balearic, băl-ẹ-ăr′ĭk.
Bali, bä′lē.
Balkan, bäl-kän′.
Balkash, bäl-käsh′.
Ballarat, băl-lạ-răt′.
Baltic, ba̤l′tĭk.
Baltimore, ba̤l′tĭ-mọr *or* -mōr.
Baluchistan, bä-lo͞o-chĭs-tän′.
Banca, băṉ′kạ.
Bangkok, băṉ-kŏk′.
Bangor, băn′gôr.
Bantry, băn′trĭ.
Baracoa, bä-rä-cō′ä.
Barbados, bär′bạ-dōs.
Barcelona, bär-sẹ-lō′nä.
Basel, bä′zẹl.
Basque, bäsk.
Batabano, bä-tä-bä-nō′.
Batangas, bä-tän′gäs.
Batavia, bä-tä′vĭ-ä.
Baton Rouge, băt-ŭn ro͞ozh′.
Batum, bä-to͞om′.
Bay, bī (Luzon).
Bayamon, bä-yä-mōn′.
Bayonne, bā-yŏn′.
Bayou, bī′o͞o.
Beatrice, bē′ạ-trēs.
Beaufort, bō′fôrt (N. C.) *or* bū′-fŭrt (S. C.).
Bechuanaland, bĕk-ū-ăn′ạ-lănd.
Beirut, bā′ro͞ot′.
Belfast, bĕl′făst (Me.) *or* bĕl-făst′ (Ireland).
Belgium, bĕl′jĭ-ŭm.
Belize, bā-lēz′.
Bellaire, bĕl-âr′.
Belle Isle, bĕl īl′.
Benares, bĕn-ä′rēz.
Bengal, bĕn-ga̤l′.
Benguela, bĕn-gā′lä.
Ben-Lomond, bĕn-lō′mọnd.
Ben-Nevis, bĕn-nĕv′ĭs.
Berber, bẽr′bẹr.
Berea, bĕr′ē-ạ.
Bergen, bẽr′gĕn.
Bergwerk, bĕrg′vĕrk.
Bering, bē′rĭng.
Berlin, bẽr′lĭn *or Ger.* bĕr-lēn′.
Bermuda, bẹr-mū′dạ.
Bern, bẽrn.
Bethlehem, bĕth′lẹ-hĕm.
Bhutan, bo͞o-tän′.
Biddeford, bĭd′ẹ-fọrd.
Billiton, bĭl-lị-tŏn′.
Binghamton, bĭng′ạm-tọn.
Binue, bĭn-o͞o-ē′.
Birkenhead, bẽrk′ẹn-hĕd.
Birmingham, bẽr′mĭng-ŭm.
Biscay, bĭs′kā.
Bismarck, bĭs′märk.
Bissao, bĭs-sowɴ′.
Bloemfontein, blēm-fŏn′tĭn.
Boer, bo͞or.
Bogota, bō-gō-tä′.
Bohemia, bō-hē′mĭ-ạ.
Böhmerwald, bē′mẹr-vält.
Bohol, bō-ōl′.
Boise, boi-zā′.
Bokhara, bŏk-ä′rä.
Bolan, bō′lạn.
Bolivar, bō-lē′vär.
Bolivia, bọ-lĭv′ĭ-ạ.
Bologna, bō-lōn′yä.
Boma, bō′mä.
Boothia, bo͞o′thĭ-ạ.
Bordeaux, bôr-dō′.
Borneo, bôr′nē-ō.
Bosna-Serai, bŏs-nä-sĕr-ī′.
Bosnia, bŏz′nĭ-ä.
Bosporus, bŏs′pō-rŭs.
Bothnia, bŏth′nĭ-ạ.
Boyne, boin.
Bradford, brăd′fọrd.
Brahma, brä′mạ.
Brahmaputra, brä-mạ-po͞o′trạ.
Brazil, brạ-zĭl′.
Brazos, brä′sọs.
Bremen, brā′mĕn.
Breslau, brĕs′low.
Brest, brĕst.
Brindisi, brēn′dē-sē.
Brisbane, brĭs′băn.
Brooklyn, brook′lĭn.
Brule, brū′lā.
Brunswick, brŭnz′wĭk.
Brussels, brŭs′sẹlz.
Bucharest, bo͞o-kạ-rĕst′.
Budapest, bo͞o′dạ-pĕst.
Buddha, bo͞o′dạ.
Buenos Aires, bwā′nōs ī′rĕs.
Bulacan, bo͞o-lä-kän′.
Bulgaria, bo͝ol-gā′rĭ-ạ.
Burlington, bûr′lĭng-tọn.
Burma, bûr′mä.
Butte, būt.

Cadillac, kăd-ĭl-lăk′.
Cagliari, käl′yä-rē.
Caimanera, kī-mä-nā′rä.
Cairo, kā′rō (U.S.); kī′rō (Egypt).
Calais, kăl′ĭs (U. S.); kä-lā′ (France).
Calcutta, kăl-kŭt′tạ.
Caledonia, kăl-ẹ-dō′nĭ-ạ.
California, kăl-ĭ-fôr′nĭ-ạ.
Callao, kä-yä′ō.
Camaguey, kä-mä-gwā′.
Cambodia, kăm-bō′dẹ-ạ.
Cambrian, kăm′brĭ-ạn.
Cambridge, kām′brĭj.
Campêche, käm-pā′chā.
Campos, käm′pōs.
Canada, kăn′ạ-dạ.
Candia, kăn′dẹ-ä.
Cantabrian, kăn-tā′brị-ạn.
Canton, kăn′tọn (U.S.); kăn-tŏn′ (China).
Cape Breton, brĕt′ọn.
Carabao, kä-rä-bä′ō.
Caracas, kä-rä′käs.
Cardenas, kär′dā-näs.
Cardiff, kär′dĭf.
Cardigan, kär′dē-gạn.
Caribbean, kăr-ĭb-bē′ạn.
Carpathian, kär-pā′-thĭ-ạn.
Carpentaria, kär-pĕn-tā′rẹ-ạ.
Cartagena, kär-tạ-jē′nạ.
Caspian, kăs′pĭ-ạn.
Cassava, kăs′sạ-vạ.
Cassiquiari, kä-sē-kē-ä′rē.
Catanduanes, kä-tän-do͞o-än′ĕs.
Catoche, kä-tō′shā.
Caucasian, ka̤-kā′shạn.
Caucasus, ka̤′kạ-sŭs.
Cayenne, kā-yĕn′.
Cayuga, kā-yo͞o′gạ.
Cebu, sē-bo͞o′.
Celebes, sĕl-ē′bĕz.
Cenis, sẹ-nē′.
Cetinje, chā-tēn′yā.
Cevennes, sā-vĕnn′.
Ceylon, sē-lŏn′.
Chad, chăd.
Chalon, shä-lōɴ′.
Chamouni, shä-mo͞o-nē′.
Champlain, shăm-plān′.
Chandeleur, shăn-dẹ-lo͞or′.
Chapala, shä-pä′lä.
Charlotte Amalie, -ä-mä′lē-ạ.
Château-Thierry, shä-tō′-tyĕ-rē′.
Chatham, chăt′ạm.
Chattahoochee, chăt-tạ-ho͞o′chē.
Chattanooga, chăt-tă-no͞o′gạ.
Chautauqua, chạ-ta̤′kwạ.
Chelan, chē-lăn′.
Chelsea, chĕl′sē.
Chemnitz, kĕm′nĭts.
Cherbourg, shĕr′bûrg.
Cherokee, chĕr-ō-kē′.
Cherrapunji, chĕr-ä-po͞on-jē′.
Chesapeake, chĕs′ạ-pēk.
Cheviot, chĭv′ẹ-ŭt.
Cheyenne, shī-ĕn′.
Chicago, shẹ-ka̤′gō.
Chickasaw, chĭk′ạ-sa̤.
Chihuahua, chē-wä′wä.
Chile, chē′lā.
Chillicothe, chĭl-lĭ-kŏth′ẹ.
Chimborazo, chĭm-bō-rä′zō.
Chippewa, chĭp′pẹ-wä.
Choctaw, chŏk′ta̤.
Christiania, krĭs-tē-ä′nē-ä.
Christiansted, krĭs′tē-än-stĕd.
Cienfuegos, sē-ĕn-fwā′gōs.
Cincinnati, sĭn-sĭn-nä′tĭ.
Clyde, klīd.
Cochin China, kō′chĭn chī′nạ.
Cœur d'Alene, kûr dä-lān′.
Cohoes, kō-hōz′.
Colima, kō-lē′mä.
Cologne, kō-lōn′.
Colombia, kō-lŏm′bē-ä.
Colombo, kō-lōm′bō.
Colon, kō-lōn′.
Colorado, kŏl-ọ-rä′dō.
Como, kō′mō.
Conception, kọn-sĕp′shŭn.
Connecticut, kŏn-nĕt′ĭ-kŭt.
Constance, kŏn′stạns.
Constantinople, kŏn-stăn-tĭ-nō′pl.
Coosa, ko͞o′sạ.
Copenhagen, kō-pẹn-hā′gẹn.
Cordoba, kŏr′dō-bä.
Corfu, kŏr-fo͞o′.
Corinth, kŏr′ĭnth.
Corpus Christi, kôr′pŭs krĭs′tē.
Corrientes, kŏr-rē-ĕn′tĕs.
Corsica, kôr′sĭ-kạ.
Costa Rica, kŏs′tä rē′kä.
Cotopaxi, kō-tō-păk′sē.
Covington, kŭv′ĭng-tọn.
Crimea, krī-mē′ạ.
Culebra, ko͞o-lā′brä.
Culloden, kŭl-lō′dẹn.
Cumbrian, kŭm′brĭ-ạn.
Curaçao, kū-rạ-sō′.
Cuzco, ko͞os′kō.
Cyprus, sī′prŭs.
Czechoslovakia, chĕk′ō-slō-vä-kĭ-ạ.

Dahomey, dä-hō′mā.
Dakota, dạ-kō′tạ.
Damascus, dạ-măs′kŭs.
Danube, dăn′ūb.
Danzig, dănt′zĭk.
Dardanelles, där-dạ-nĕlz′.
Darfur, där′fo͞or.
Darien, dā′rẹ-ĕn.
Davenport, dăv′ẹn-pōrt.
Decatur, dē-kā′tụr.
Dekkan, dĕk′kạn.
Delaware, dĕl′ạ-wâr.
Delhi, India, dĕl′lē.
Des Moines, dā moin′.
Des Plaines, dā plān′.
Detroit, dẹ-troit′.
Dijon, dē-zhōɴ′.
Dnieper, nē′pẹr.
Dniester, nēs′tẹr.
Dominica, dŏm-ẹ-nē′kạ.
Donegal, dŏn-ẹ-ga̤l′.
Dovrefield, dō-vrẹ-fyĕld′.
Drave, drä′vĕ.
Dresden, drĕz′dẹn.
Drogheda, drŏ′hẹ-dạ.
Dublin, dŭb′lĭn.
Dubuque, do͞o-būk′.
Duluth, dū-lo͞oth′.
Duncansby, dŭṉ′kạns-bĭ.
Dundalk, dŭn-da̤k′.
Dundee, dŭn-dē′.
Dunedin, dŭn-ēd′ĭn.
Dungeness, dŭn-jẹ-nĕs′.
Durango, do͞o-rän′gō.
Dvina, dvē-nä′.
Dyaks, dī′ăks.

Eau Claire, ō klâr′.
Ebro, ē′brō.
Ecuador, ĕk-wä-dōr′.
Edinburgh, ĕd′ịn-bŭr-ō.
Egypt, ē′jĭpt.
Egyptian, ē-jĭp′shạn.
Elba, ĕl′bä.
Elbe, ĕl′bẹ.
Elberfeld, ĕl′bẹr-fĕlt.
Elbruz, ĕl-bro͞oz′.
Eleuthera, ẹ-lū′thẹr-ä.
Elgin, ĕl′jĭn.
Elmira, ĕl-mī′rạ.
El Paso, ĕl pä′sō.
Elyria, ē-lĭr′ẹ-ạ.
Erz, ĕrts.
Essen, ĕs′sẹn.
Essequibo, ĕs-sā-kē′bō.
Esthonia, ĕs-thō′nĭ-ạ.
Eubœa, ū-bē′ạ.
Euphrates, ū-frā′tēz.
Eurasia, ū-rā′shĭ-ạ.
European, ū-rō-pē′ạn.
Evansville, ĕv′ạnz-vĭl.
Everest, ĕv′ẹr-ĕst.
Eyre, âr.

Falkland, fa̤k′lạnd.
Faribault, făr-ẹ-bō′.
Fez, fĕz.
Fezzan, fĕz-zän′.
Fiji, fē′jē.
Filipino, fĭl-ĭ-pē′nō.
Findlay, fĭnd′lā.
Finland, fĭn′lạnd.
Fiord, fyôrd.
Firth, fẽrth.
Fiume, fyo͞o′mā.
Flamborough, flăm′bŭr-rō.
Fond du Lac, fŏn dū lăk′.
Foochow, fo͞o-chō′.
Formosa, fôr-mō′sä.
Fort Wayne, -wān.
Frankfort, frăṉk′fụrt.
Fraser, frā′zẹr.
Frederichsted, frĕd′ĕr-ĭk-stĕd
Fremont, frē-mŏnt′.
Fresno, frĕs′nō.
Fuegian, fū-ē′jĭ ạn.
Fujiyama, fo͞o-jĭ-ä′mä.

Galapagos, gă-lăp′ā-gōs.
Galatz, gä′läts.
Galilee, găl′ĭ-lē.
Galveston, găl′vẹs-ton.
Galway, ga̤l′wā.
Ganges, găn′jēz.
Garda, gär′dä.
Garonne, gä-rŏn′.
Gasconade, găs-kō-nād′.
Genesee, jĕn-ẹ-sē′.
Geneva, jẹ-nē′vạ.
Genoa, jĕn′ọ-ạ.
Georgia, jôr′jĭ-ạ.

Geral, hā-räl′.
Gettysburg, gĕt′ĭz-bûrg.
Geyser, gī′sẽr.
Ghats, gäts.
Ghent, gĕnt.
Gibraltar, jĭ-brạl′tạr.
Gila, hē′lä.
Girardeau, jē-rär-dō′.
Gironde, zhē-rōɴd′.
Glasgow, glăs′gō.
Gloucester, glŏs′tẹr.
Gloversville, glŭv′ẹrz-vĭl.
Gobi, gō′bē.
Gondar, gŏn′där.
Goteborg, gōt′ẹ-bōrg.
Grampian, grăm′pĭ-ạn.
Granada, grä-nä′dä.
Gran Chaco, grän chä′kō.
Grand Manan, -mạ-năn′.
Gratz, grĕts.
Greenwich, grēn′wĭch (U. S.); grĕn′ĭj (Eng.).
Grinnell, grĭn-ĕl′.
Guadalajara, gwä-dä-lä-hä′rä.
Guadalquivir, gwä-däl-kē-vēr′.
Guadalupe, gạ-dạ-lo͞op′ (U. S.); gwä-dä-lo͞o′pä (Spanish).
Guam, gwäm.
Guanabacoa, gwä-nä-bä-kō′ä.
Guanajuato, gwä-nä-hwä′tō.
Guantanamo, gwän-tä′nä-mō.
Guatemala, gwạ-tā-mä′lä.
Guayama, gwī-ä′mä.
Guayaquil, gwī-ä-kēl′.
Guernsey, gẽrn′zẹ.
Guiana, gē-ä′nä.
Guinea, gĭn′ē.
Guthrie, gŭth′rẹ.
Guyandot, gī-ạn-dŏt′.

Hagerstown, hā′gẹrz-town.
Hague, hāg.
Hainan, hī-nän′.
Haiti, hā′tĭ.
Hakodate, hä-kō-dä′tē.
Halifax, hăl′ẹ-făks.
Halle, häl′lẹ.
Hamburg, hăm′bûrg.
Hamite, hā′mīt.
Hankow, hän-kō′.
Hanoi, hä-nō′ē.
Hatteras, hăt′tẹr-ạs.
Havana, hạ-văn′ạ.
Havre, hä′vr.
Havre de Grace, -dẹ gräs.
Hawaii, hä-wī′ē.
Hebrides, hĕb′rĭ-dēz.
Hejaz, hĕj-äz′.
Hekla, hĕk′lạ.
Helena, hĕl′ẹ-nạ.
Helgoland, hĕl′gō-länd.
Helsingfors, hĕl′sĭng-fōrs′.
Henlopen, hĕn-lō′pẹn.
Herat, hẹr-ät′.
Herculaneum, hẽr-kū-lā′nẹ-ŭm.
Herzegovina, hert-se-go-vē′nä.
Hiderabad, hī-dẽr-ạ-bäd′.
Himalaya, hĭm-ä′lạ-yạ.
Hindu Kush, hĭn′do͞o ko͞osh.
Hindustan, hĭn-do͞o-stän′.
Hobart, hō′bạrt.
Hoboken, hō′bō-kẹn.
Holguin, ōl-gēn′.
Hondo, hŏn′dō.
Honduras, hŏn-do͞o′rạs.
Hongkong, hŏng-kŏng′.
Honolulu, hō-nō-lo͞o′lo͞o.
Hoosac, ho͞o′sạk.
Housatonic, ho͞o-sạ-tŏn′ĭc.
Houston, hūs′tọn.
Hudson, hŭd′sọn.
Hue, ho͞o-ā′.
Hugli, ho͞o′glē.
Humber, hŭm′bẹr.
Humboldt, hŭm′bōlt.
Hungary, hŭn′gạ-rĭ.
Huron, hū′rọn.
Hwang ho, hwäng hō′.

Iberian, ī-bē′rẹ-ạn.
Idaho, ī′dạ-hō.
Illimani, ēl-yē-mä′nē.
Illinois, ĭl-lĭ-noi′ *or* -noiz′.
Iloilo, ē-lō-ē′lō.
Inagua, ē-nä′gwä.
Incas, ĭn̲′kạs.
India, ĭn′dĭ-ạ.
Indiana, ĭn-dĭ-ăn′ạ.
Indianapolis, ĭn-dĭ-ăn-ăp′ọ-lĭs.
Indies, ĭn′dēz.
Indus, ĭn′dŭs.
Innsbruck, ĭns′pro͝ok.
Inverness, ĭn-vẹr-nĕss′.
Ionian, ī-ō′nĭ-ạn.
Iowa, ī′ō-wạ.
Iquique, ē-kē′kā.
Iran, ē-rän′.
Irkutsk, ĭr-ko͞otsk′.
Ironton, ī′ụrn-tọn.
Irrawaddy, ĭr-ạ-wŏd′ĭ.
Isla de Pinos, ēs′lä dā pē′nōs.
Isla de Vieques, -vyā′kās.
Ispahan, ĭs-pä-hän′.
Ishpeming, ĭsh′pẹm-ĭng.
Isle Royal, ēl rwä-yäl.
Italian, ĭ-tăl′yạn.
Itasca, ī-tăs′kạ.
Ithaca, ĭth′ạ-kạ.

Jalapa, hä-lä′pä.
Jamaica, jạ-mā′kạ.
Japan, jạ-păn′.
Jassy, yä′sē.
Java, jä′vạ.
Jersey, jẽr′zĭ.
Jerusalem, jẹ-ro͞o′sạ-lĕm.
Johannesburg, yō-hä′nĕs-bûrg.
Joliet, jō′lẹ-ĕt.
Jolo, ho-lō′.
Joplin, jŏp′lĭn.
Juan de Fuca, ho͞o-än′ dā fo͞okä.
Juan Fernandez, -fĕr-nän′dĕs.
Juarez, hwä′rĕs.
Jucaro, ho͞o′kä-rō.
Jugoslavia, yo͞o′gō-slä′vĭ-ạ.
Juneau, jū-nō′.
Jungfrau, yo͝ong′frow.
Juniata, jū-nĭ-ăt′ạ.
Jura, jū′rä.

Kabul, kä′bo͞ol.
Kadiak, käd-yăk′.
Kaffir, kăf′fẽr.
Kahoolawe, kä-hō-ō-lä′vā.
Kalahari, kä-lä-hä′rĭ.
Kama, kä′mä.
Kamchatka, käm-chät′kạ.
Kamerun, kä-mā-ro͞on′.
Kanawha, kạ-nạ′wạ.
Kankakee, kăn̲-kạ-kē′.
Kano, kä-nō′.
Kara, kä′rä.
Karakoram, kä-rä-kō′răm.
Kashgar, käsh-gär′.
Kashmir, kăsh-mēr′.
Kaskaskia, kăs-kăs′kĭ-ạ.
Katahdin, kạ-tä′dịn.
Katoomba, kā-to͞om′bạ.
Kauai, kow-ī′ē.
Kecskemet, kĕch-kĕm-āt′.
Keewatin, kē-wä′tĭn.
Kenia, kā-nē′ä.
Kennebec, kĕn-ẹ-bĕk′.
Keokuk, kē′ō-kŭk.
Khaibar, kī′ē-bär.
Khartum, kär-to͞om′.
Khelat, kẹl-ät′.
Khingan, kĭn-gän′.
Khiva, kē′vä.
Kiakhta, kē-äk′tä.
Kiauchau, kē-ow′chow.
Kilauea, kē-low-ā′ä.
Kilimanjaro, kĭl-ē-män-jä-rō′.
Killarney, kĭl-är′nĭ.
Kimberley, kĭm′bẽr-lị.
Kiolen, kyē′lĕn.
Kirghiz, kĭr-gēz′.
Kirin, kĭr′ĭn.
Kirkcaldy, kịr-kạl′dĭ.
Kittery, kĭt′ẹr-ĭ.
Klamath, klä′măth.
Klondike, klŏn′dīk.
Knoxville, nŏks′vĭl.
Kobe, kō′bẹ.
Kongo, kŏn̲′gō.
Konigsberg, kō′nĭgs-bĕrg.
Kordofan, kôr-dō-fän′.
Korea, kō-rē′ạ.
Krakow, krā′kō.
Kremlin, krĕm′lĭn.
Kronstadt, krōn′stät.
Kuenlun, kwĕn-lo͞on′.
Kuka, ko͞o′kạ.
Kyoto, kē-ō′tō.

Labrador, lăb-rạ-dôr′.
Lachine, lä-shēn′.
La Crosse, lạ krôs′.
Ladoga, lăd′ō-gạ.
Ladrones, lạ-drōn′ēs.
Lafayette, lä-fā-ĕt′.
La Guaira, lä gwī′rä.
Laguna, lä-go͞o′nä.
Lamoille, lạ-moil′.
Lanai, lä-nä′ē.
Lancaster, lăn̲k′ạs-tẹr.
Landes, lōɴd.
Laoag, low-äg′.
La Paz, lä päs′.
Lapland, lăp′lạnd.
Laporte, lạ-pōrt′.
Laramie, lăr′ạ-mē.
Laredo, lạ-rā′dō.
Lasalle, lạ-săl′.
Lassa, läs′sä.
Lassen, lăs′sẹn.
Las Vegas, läs vā′gäs.
Latvia, lăt′vĭ-ạ.
Laurentian, lạ-rĕn′shẹ-ạn.
Lausanne, lō-zän′.
Lead City, lēd.
Leadville, lĕd′vĭl.
Leavenworth, lĕv′ẹn-wọrth.
Lebanon, lĕb′ạ-nọn.
Leghorn, lĕg′hôrn.
Leicester, lĕs′tẹr.
Leiden, lī′dẹn.
Leipzig, līp′zĭk.
Leith, lēth.
Lemberg, lĕm′bĕrg.
Leon, lā-ōn′ (Spanish).
Leone, lē-ō′nē.
Leyte, lā′ē-tā.
Liberia, lī-bē′rĭ-ạ.
Libia, lĭb′ĭ-ạ.
Libyan, lĭb′ẹ-ạn.
Liege, lē-āzh′.
Lille, lēl.
Lima, lī′mạ (U.S.); lē′mä (Peru).
Limerick, lĭm′er-ĭk.
Limoges, lē-mōzh′.
Lingayen, lēn-gä-yān′.
Lipari, lĭp′ạ-rē.
Lisbon, lĭz′bọn.
Lisburn, lĭs′bûrn.
Lithuania, lĭth-ū-ā′nĭ-ạ.
Llano Estacado, yä′nō ĕs-tä-kä′dō.
Loanda, lō-än′dä.
Loch, lŏk.
Lodz, lōdz.
Loess, lĕs.
Lofoden, lō-fō′dẹn.
Logan, lō′gạn.
Loire, lwär.
Lombok, lŏm-bŏk′.
Londonderry, lŭn′dŭn-dĕr-ĭ.
Los Angeles, lōs än̲′gĕl-ĕs.
Lough Neagh, lŏh nā′.
Louisiana, lo͞o-ē-zē-ä′nạ.
Louisville, lo͞o′ĭs- *or* lo͞o′ĭ-vĭl.
Louvre, lo͞ovr.
Lucerne, lo͞o-sẽrn′.
Lucknow, lŭk′now.
Luray, lū-rā′.
Luxemburg, lo͞oks′ĕm-bûrg.
Luzon, lo͞o-sōn′.
Lyon, lē-ōɴ′.

Macao, mä-kow′.
Mackenzie, mạ-kĕn′zĭ.
Mackinac, măk′ĭ-nạ.
Macon, mā′kụn.
Madagascar, măd-ạ-găs′kạr.
Madeira, mạ-dē′rạ.
Madras, mạ-drăs′.
Madrid, măd′rĭd (U. S.); mạ-drĭd′ (Spain).
Maestra, mä-ās′trä.
Magdalena, mäg-dä-lā′nä.
Magdeburg, mäg′dẹ-bo͞org.
Magellan, mạ-jĕl′ạn.
Maggiore, mäd-jō′rẹ.
Makassar, mạ-käs′sạr.
Malaga, măl′ạ-gạ.
Malakka, mạ-lăk′ạ.
Malay, mạ-lā′.
Malaysia, mạ-lā′shĭ-ạ.
Malolos, mä-lō′lōs.
Managua, mä-nä′gwä.
Manchester, măn′chẹs-tẹr.
Manchuria, măn-cho͞o′rẹ-ạ.
Mandalay, măn′dä-lā.
Manila, mạ-nĭl′ạ.
Manistee, mạn-ĭs-tē′.
Manitoba, măn-ĭ-tō′bä.
Manitou, măn′ẹ-to͞o.
Manitoulin, măn-ẹ-to͞o′lĭn.
Manzanillo, män-sä-nē′yō.
Maori, mä′ō-rē.
Maracaibo, mä-rä-kī′bō.
Maranon, mä-rän′yōn.
Marathon, măr′ạ-thŏn.
Marcy, mär′sĭ.
Marias, mạ-rī′ạz.
Marmora, mär′mọ-rạ.
Marseille, mär-sā′.
Martinique, mär-tĭ-nēk′.
Masbate, mäs-bä′tā.
Mashonaland, mạ-shō′nạ-lănd.
Maskat, măs-kăt′.
Massachusetts, măs-ạ-chū′sẹts.
Massaua, mäs-sow′ä.
Massillon, măs′ĭl-ọn.
Matabeleland, măt-ạ-bē′lănd.
Matagorda, măt-ạ-gôr′dạ.
Matamoros, măt-ạ-mō′rọs.
Matanzas, mạ-tăn′sạs.
Matapan, mä-tä-pän′ (Gr.).
Mauch Chunk, mạk chŭn̲k′.
Maui, mow′ē.
Maulmain, mạl-mīn′.
Mauna Kea, mow′nä kā′ä.
Mauna Loa, -lōä′.
Mauritius, mạ-rĭsh′ĭ-ŭs.
Mayaguez, mī-ä-gwās′.
Maysi, mī′sē.
Mazatlan, mä-sät-län′.
Mediterranean, mĕd-ĭ-tẹr-rā′nẹ-ạn.
Mekka, mĕk′ạ.
Mekong, mā-kŏng′.
Melanesia, mĕl-ạn-ē′shĭ-ạ.
Melbourne, mĕl′bûrn.
Memphis, mĕm′fĭs.
Menai, mĕn′ī.
Mendocino, mĕn-dō-sē′nō.
Menomonee, mẹ-nŏm′ọ-nē.
Meriden, mĕr′ĭ-dĕn.
Merrimack, mĕr′ĭ-măk.
Mersey, mẽr′zĭ.
Merthyr-Tydfil, mẽr-thẹr-tĭd′fĭl.
Mesopotamia, mĕs′-ō-pō-tā′mĭ-ạ.
Messina, mĕs-sē′nä.
Metz, mĕts.
Miami, mī-ăm′ĭ.
Michigan, mĭsh′ĭ-gạn.
Micronesia, mī-krō-nē′shĭ-ạ.
Milan, mĭl′ạn *or* mĭ-lăn′.
Mille Lacs, mēl lăk′.
Milos, mē′lōs (Greece).
Milwaukee, mĭl-wạ′kē.
Mindanao, mēn-dä-nä′ō.
Mindoro, mēn-dō′rō.
Minneapolis, mĭn-ẹ-ăp′ọ-lĭs.
Minnehaha, mĭn-ẹ-hä′hä.
Minnesota, mĭn-ẹ-sō′tạ.
Mississippi, mĭs-ĭs-ĭp′ĭ.
Missoula, mĭz-o͞o′lạ.
Missouri, mĭs-o͞o′rĭ.
Mitylene, mĭt-ē-lē′nē.
Mobile, mō-bēl′.
Mocha, mō′kạ.
Mohammed, mō-hăm′mĕd.
Mohave, mō-hä′vā.
Mohawk, mō′hạk.
Molokai, mō-lō-kī′.
Moluccas, mō-lŭk′ạz.
Mombaza, mŏm-bäs′ạ.
Monaco, mŏn′ä-kō.
Monastir, mŏn-ạs-tēr′.
Moncton, mŭn̲k′tọn.
Mongolia, mŏn-gō′lĭ-ạ.
Monongahela, mō-nŏn-gạ-hē′lạ.
Monrovia, mŏn-rō′vĭ-ạ.
Montana, mŏn-tä′nạ.
Montauk, mŏn-tạk′.
Mont Blanc, mōɴ blōɴ′ *or* mount blăn̲k.
Mont Cenis, mōɴ′sẹ-nē′ *or* mount.
Montenegro, mŏn-tā-nā′grō.
Monterey, mŏn-tẹ-rā′.
Montevideo, mŏn-tē-vĭd-ē′ō.
Montgomery, mọnt-gŭm′ẹr-ĭ.
Monticello, mŏn-tē-sĕl′lō.
Montpelier, mŏnt-pē′lĭ-ẹr.
Montreal, mŏnt-rẹ-ạl′.
Moraine, mō-rān′.
Moravia, mō-rā′vĭ-ạ.
Moray, mŭr′ā.
Morelia, mō-rā′lē-ạ.
Morocco, mō-rŏk′ō.
Moscow, mŏs′kō.
Mount Lyell, -lī′ĕl.
Mount McKinley, -mạ-kĭn′lĭ.
Mount St. Elias, -ẹ-lī′ạs.
Mount Tyndall, -tĭn′dạl.
Mozambique, mō-zạm-bēk′.
Mukden, mo͞ok-dĕn′.
Munich, mū′nĭk.
Murray, -mŭr′rā.
Muskatine, mŭs-kạ-tēn′.
Muskegon, mŭs-kē′gọn.

Namur, nā′mûr.
Nanling, nän′lĭng.
Nantes, nănts.
Nanticoke, năn′tĭ-cōk.
Nantucket, năn-tŭk′ẹt.
Naples, nā′plz.
Narragansett, năr-rạ-găn′sẹt.
Nashua, năsh′ū-ạ.
Nassau, năs′ạ.
Natchez, nă′chẹz.
Navajo, nä′vä-hō.
Naxos, năk′sōs.
Nebraska, nẹ-brăs′kạ.
Neches, nĕch′ĕz.
Negritos, nē-grī′tōs.
Negros, nā′grōs.
Nepal, nā-päl′.
Netherlands, nĕth′ẹr-lạndz.
Neuse, nūs.
Nevada, nẹ-vä′dạ.
Newark, nū′ạrk.
Newfoundland, nū′fụnd-lạnd.
New Guinea, -gĭn′ē.
New Hampshire, -hămp′shịr.
New Orleans, -ôr′lẹ-ạnz.
New Zealand, -zē′lạnd.
Niagara, nī-ăg′ạ-rạ.
Nicaragua, nē-kä-rä′gwä.
Nice, nēs.
Niger, nī′jẹr.
Nigeria, nī-jēr′ĭ-ạ.
Niihau, nē-how′.
Nimes, nēm.
Niobrara, nī-ō-brä′rạ.
Nizhnii Novgorod, nĭzh′nĭ nŏv′gō-rŏd.
Nome, nōm.
Norfolk, nôr′fọk.
Norristown, nŏr′ĭs-town.
Norway, nôr′wā.
Norwegian, nŏr-wē′jĭ-ạn.
Norwich, nôr′wĭch (U. S.); nŏr′rĭj (Eng.).
Nottingham, nŏt′ĭng-ạm.
Nova Scotia, nō′vạ skō′shĭ-ạ.
Nova Zembla, nō′vạ zĕm′blạ.
Nubia, nū′bĭ-ạ.
Nueces, nwā′sĕs.
Nuevitas, nwā-vē′tās.
Nuremberg, nū′rĕm-bĕrg.
Nyanza, nī-ăn′zạ.
Nyassa, nē-äs′sä.

Oahu, ō-ä′ho͞o.
Oakland, ōk′lạnd.
Oaxaca, wä-hä′kä.
Ob, ōb.
Ocmulgee, ōk-mŭl′gē.
Oder, ō′dẹr.
Odessa, ō-dĕs′sạ.
Ogden, ŏg′dĕn.
Ogeechee, ō-gē′chē.
Okanogan, ō-kā-nŏg′ạn.
Okechobee, ō-kē-chō′bē.
Okefinokee, ō-kē-fī-nō′kē.
Okhotsk, ō-kŏtsk′.
Oklahoma, ōk-lä-hō′mạ.
Oldham, ōld′ạm.
Olympia, ō-lĭm′pĭ-ạ.
Olympus, ō-lĭm′pŭs.
Omaha, ō′mạ-hạ.

Oman, ō-män′.
Omsk, ŏmsk.
Onega, ō-nē′ga̤.
Oneida, ō-nī′da̤.
Ontario, ŏn-tā′rĭ-ō.
Oporto, ō-pōr′tō.
Oran, ō-rän′.
Oregon, ŏr′ẹ-gŏn.
Organ, ôr′ga̤n.
Orinoco, ō-rĭ-nō′kō.
Orizaba, ō-rē-sä′bä.
Orkney, ôrk′nē.
Orleans, ŏr-lā-ŏɴs′ (Fr.).
Osage, ō-sāj′.
Osaka, ō′zä-kä.
Oshkosh, ŏsh′kŏsh.
Oswego, ŏs-wē′gō.
Otranto, ō-trän′tō.
Ottawa, ŏt′ta̤-wa̤.
Ottoman, ŏt′tọ-ma̤n.
Ottumwa, ŏt-tŭm′wa̤.
Ouachita, wŏsh′ĭ-ta̤.
Ouse, o͞oz.
Owyhee, ō-wī′hē.
Ozark, ō-zärk′.

Pacaraima, pä-kä-rī′mä.
Pachuca, pä-cho͞o′kä.
Pacific, pa̤-sĭf′ĭk.
Paducah, pa̤-dū′ka̤.
Pagan, pā′ga̤n.
Pago, pä′gō.
Pagoda, pä-gō′dä.
Paisley, pāz′lĭ.
Palawan, pä-lä′wän.
Palembang, pä-lĕm-bäng′.
Palermo, pa̤-lĕr′mō.
Palestine, păl′ẹs-tīn.
Pamir, pä-mēr′.
Pamlico, păm′lĭ-kō.
Pampanga, päm-pän′gä.
Pampas, päm′päs.
Panama, păn-a̤-mä′.
Panay, pä-nī′.
Papuan, păp′ū-a̤n.
Para, pä-rä′.
Paragua, pä-rä′gwä.
Paraguay, pä-rä-gwī′.
Paramaribo, păr-a̤-măr′ĭ-bō.
Parana, pä-rä-nä′.
Paris, păr′ĭs.
Parma, pär′ma̤.
Parsee, pär′sē.
Parthenon, pär′thē-nŏn.
Pascagoula, păs-ka̤-go͞o′la̤.
Pasig, pä-sēk′.
Passaic, păs-sā′ĭk.
Patagonia, păt-a̤-gō′nĭ-a̤.
Paterson, păt′ẹr-sọn.
Patras, pä-träs′.
Pawtucket, pa̤-tŭk′ẹt.
Pecos, pē′kōs.
Peedee, pē-dē′.
Peking, pē-kĭng′.
Peling, pē-lĭng′.
Pennine, pĕn′nīn.
Pennsylvania, pĕn-sĭl-vā′nĭ-a̤.
Penobscot, pẹ-nŏb′scọt.
Pensacola, pĕn-sa̤-kō′la̤.
Peoria, pē-ō′rĭ-a̤.
Pepin, pē′pĭn.
Pernambuco, pĕr-näm-bo͞o′kō.
Persia, pẽr′shĭ-a̤.
Perth, pẽrth.
Peru, pẹ-ro͞o′.
Petrograd, pyĕt′rọ-grät.
Philadelphia, fĭl-a̤-dĕl′fĭ-a̤.
Philæ, fī′lē.
Philippine, fĭl′ĭp-ĭn.
Philippopolis, fĭl-ĭp-ŏp′ō-lĭs.
Phœnix, fē′nĭks.
Piedmont, pēd′mŏnt.
Pierre, pēr.
Pietermaritzburg, pē-tẹr-mâr′ĭts-bûrg.
Pike, pīk.
Pilcomayo, pĭl-kō-mī′ō.
Pilsen, pĭl′sen.
Pinar del Rio, pē-när′ dĕl rē′ō.
Pindus, pĭn′dŭs.
Pinos, pē′nōs.
Piræus, pī-rē′ŭs.

Pittsburgh, pĭts′bûrg.
Plata, plä′tä.
Platten See, plä′tẹn zā.
Pnompenh, p′nŏm-pĕn.
Poland, pō′la̤nd.
Polyp, pŏl′ĭp.
Pomona, pō-mō′na̤.
Pompeii, pŏm-pā′yē.
Ponce, pōn′sā.
Pontchartrain, pŏn-cha̤r-trān′.
Popocatepetl, pō-pō-kăt-ā-pā′-tl.
Port au Prince, pōrt ō prĭns′.
Porto Rico, pōr′tō rē′kō.
Port Said, -sä-ēd′.
Portsmouth, pōrts′mŭth.
Portugal, pōr′tū-ga̤l.
Portuguese, pōr′tū-gēz.
Potomac, pō-tō′ma̤k.
Potosi, pō-tō-sī′.
Poughkeepsie, pọ-kĭp′sĭ.
Prague, prāg.
Pressburg, prĕs′bo͞org.
Pretoria, prē-tōr′ē-a̤.
Pribilof, prē-bē-lŏf′.
Prussia, prŭsh′ya̤.
Pruth, pro͞oth.
Puebla, pwĕb′lä.
Pueblo, pwĕb′lō.
Puget, pū′jẹt.
Punjab, pŭn-jäb′.
Puno, po͞o′nō.
Puyallup, pū-ăl′ŭp.
Pyrenees, pĭr′ẹ-nēz.

Quagga, kwăg′ga̤.
Quebec, kwẹ-bĕk′.
Queretaro, kā-rā′tä-rō.
Quincy, kwĭn′zĭ *or* -sĭ.
Quito, kē′tō.

Racine, ra̤-sēn′.
Rainier, rā′nēr.
Raleigh, ra̤′lẹ.
Rangoon, rän-go͞on′.
Rappahannock, răp-a̤-hăn′ọk.
Ravenna, ra̤-vĕn′a̤.
Reading, rĕd′ĭng.
Reims, rēmz.
Rennes, rĕn.
Rhine, rīn.
Rhone, rōn.
Riga, rī′ga̤ (U.S.); rē′gä (Rus.).
Rio Cauto, rē′o kow′tō.
Rio de Janeiro, -jä-nā′rō.
Rio Grande, rē′ō grän′dā.
Rio Negro, -nā′grō.
Rio Virgen, -vēr′hĕn.
Roanoke, rō-a̤-nōk′.
Rochelle, rọ-shĕl′.
Rochester, rŏch′ẹs-tẹr.
Romano, rō-mä′nō.
Romanzof, rō-män′tsŏf.
Rosario, rō-sä′rē-ō.
Rotterdam, rŏt′ẹr-dăm.
Rouen, ro͞o′ŏɴ′.
Roumelia, ro͞o-mē′lẹ-a̤.
Rumania, ro͞o-mā′nị-a̤.
Russia, rŭsh′a̤.

Saco, sa̤′kō.
Sacramento, săk-ra̤-mĕn′tō.
Saginaw, săg′ĭ-na̤.
Sagua la Grande, sä′gwä lä grän′dā.
Sahara, sä-hä′ra̤.
Saigon, sä′ē-gŏn.
Saint Albans, sānt a̤l′ba̤nz.
Saint Augustine, -a̤′gŭs-tēn.
Saint Bernard, -bẽr-närd′.
Saint Clair, -klâr′.
Saint Croix, -kroi′.
Saint Gotthard, gō-tärd′.
Saint Helena, sĕnt hẹ-lē′na̤.
Saint Lawrence, sānt la̤′rẹns.
Saint Louis, -lo͞o′ĭs *or* -lo͞o′ĭ.
Saint Petersburg, -pē′tẹrz-bûrg.
Saint Roque, -rōk.
Saint Sophia, -sō-fē′ä.
Sakhalin, sä-kä-lēn′.
Salinas, sa̤-lē′na̤s.
Salisbury, sa̤lz′bẹr-ĭ.
Saloniki, sä-lō-nē′kē.

Saltillo, säl-tē′yō.
Salvador, säl-vä-dōr′.
Salzburg, sälts′bo͝org.
Samar, sä-mär′.
Samarkand, säm-a̤r-känd′.
Samoa, sä-mō′ä.
San Antonio, sän än-tō′nĭ-ō.
San Bernardino, -bĕr-när-dē′nō.
San Cristobal, -krēs-tō′bäl.
Sancti Spiritus, sănk′tĭ spĭ′rĭ-to͞os.
Sandhurst, sănd′hu̇rst.
San Diego, săn dē-ā′gō.
Sandusky, săn-dŭs′kĭ.
San Francisco, -frăn-sĭs′kō.
Sangamon, săn̤′ga̤-mŏn.
Sangay, sän-gī′.
San German, sän hĕr-män′.
Sangre de Cristo, sän′grā dā krēs′tō.
San Joaquin, sän hō-ä-kēn′.
San Jose, -hō-sā′.
San Juan, -hōō-än′.
San Lucas, -lo͞o′ka̤s.
San Luis, -lo͞o-ēs′.
San Marino, -mä-rē′nō.
San Pablo, -pä′blō.
Santa Barbara, săn′ta̤ bär′ba̤-ra̤.
Santa Cruz, -kro͞os.
Santa Fe, -fā.
Santee, săn-tē′.
Santiago, sän-tē-ä′gō.
Santo Domingo, sän′to dō-mĭn′gō.
Santos, sän′tōs.
Saone, sōn.
São Paulo, souɴ pou′lo͞o.
Saratoga, săr-a̤-tō′ga̤.
Sarawak, sä-rä′wäk.
Sardinia, sär-dĭn′ĭ-a̤.
Saskatchewan, săs-kăch′ẹ-wa̤n.
Sault Sainte Marie, so͞o sĕnt mā′rĭ.
Savaii, sä-vī′ē.
Savannah, sa̤-văn′a̤.
Save, säv.
Scandinavia, skăn-dĭ-nā′vĭ-a̤.
Schenectady, skẹ-nĕk′ta̤-dē.
Schwarzwald, shvärtz′vält.
Scilly, sĭl′ĭ.
Scranton, skrăn′tọn.
Seattle, sē-ăt′l.
Sedalia, sē-dā′lĭ-a̤.
Seine, sān.
Selvas, sĕl′va̤s.
Seminole, sĕm′ĭ-nōl.
Semite, sĕm′ĭt.
Semitic, sĕm-ĭt′ĭc.
Seneca, sĕn′ẹ-ka̤.
Senegal, sĕn-ẹ-ga̤l′.
Senegambia, sĕn-ẹ-găm′bĭ-a̤.
Seoul, sā-o͞ol′.
Serra do Mar, sār′rä dō mär′.
Serbia, sẽr′bĭ-a̤.
Severn, sĕv′ẹrn.
Sevier, sẹ-vēr′.
Seville, sĕv′ĭl, or sā-vil′yā.
Shamokin, sha̤-mō′kĭn.
Shanghai, shăng-hä′ĭ.
Shannon, shăn′ọn.
Shasta, shăs′ta̤.
Sheffield, shĕf′fēld.
Shenandoah, shĕn-ăn-dō′a̤.
Shetland, shĕt′la̤nd.
Shoshone, shō-shō′nē.
Shreveport, shrēv′pōrt.
Siam, sī-ăm′.
Siberia, sī-bē′rĭ-a̤.
Sicily, sĭs′ĭ-lĭ.
Sierra Madre, sē-ĕr′a̤ mä′drā.
Sierra Nevada, -nā-vä′dä.
Singapore, sĭn̤-ga̤-pōr′.
Sioux, so͞o.
Sisal, sĭs′a̤l.
Sitka, sĭt′ka̤.
Smyrna, smẽr′na̤.
Snowdon, snō′dọn.
Sofia, sō-fē′ä.
Sogne, sōn.
Sokoto, sō-kō-tō′.
Solway, sŏl′wā.
Somali, sō-mä′lē.

Somerville, sŭm′ẹr-vĭl.
Souris, so͞o-rē′.
Spokane, spō-kăn′.
Stabiæ, stā′bĭ-ē.
Staffa, stăf′a̤.
Stanovoi, stä-nō-voi′.
Steppes, stĕps.
Stettin, stĕt-tēn′.
Steubenville, stū′bẹn-vĭl.
Stirling, stẽr′lĭng.
Stockholm, stŏk′hōlm.
Strassburg, străz′bûrg.
Streator, strē′tor.
Stuttgart, sto͝ot′gärt.
Suakin, swä′kĭn.
Subic, so͞o-bēk′.
Sucre, so͞o′krẹ.
Sudan, so͞o-dän′.
Sudanese, so͞o-dăn-ēz′.
Suez, so͞o-ĕz′.
Suisun, so͞o-ē-so͞on′.
Sulaiman, so͞o-lä-ē-män′.
Sulu, so͞o-lo͞o′.
Sumatra, so͞o-mä′trä.
Sunda, sŭn′da̤.
Sunderland, sŭn′dẹr-la̤nd.
Susquehanna, sŭs-kwẹ-hăn′a̤.
Suwanee, sū-wa̤′nē.
Swansea, swŏn′sē.
Sweden, swē′dẹn.
Switzerland, swĭt′zẹr-la̤nd.
Sydney, sĭd′nĭ.
Syra, sē′rä.
Syracuse, sĭr′a̤-kūs.
Syria, sĭr′ĭ-a̤.

Tabriz, tä-brēz′.
Tacoma, tä-kō′mä.
Tagus, tā′gŭs.
Tahlequah, tä′lē-kwä.
Tahoe, tä-hō′.
Tallahassee, tăl-a̤-hăs′ē.
Tampa, tăm′pa̤.
Tampico, tăm-pē′kō.
Tananarivo, tä-nä′nä-rē-vō.
Tanganyika, tän-gän-yē′kä.
Taranto, tä′rän-tō.
Tarim, tä-rēm′.
Tashkend, täsh-kĕnt′.
Tasmania, tăz-mā′nĭ-a̤.
Taunton, tän′tọn.
Taurus, ta̤′rŭs.
Tchad, chăd.
Tegucigalpa, tā-go͞o-sē-gäl′pä.
Teheran, tẹ-hrän′.
Tehuantepec, tā-wän-tā-pĕk′.
Tennessee, tĕn-nẹs-sē′.
Terre Haute, tĕr-ẹ hōt′.
Texas, tĕx′a̤s.
Thames, tĕmz (Eng.).
Tiber, tī′bẹr.
Tibet, tĭ-bĕt′ *or* tĭb′ĕt.
Tibetan, tĭb′ē-ta̤n.
Tien Shan, tē-än′ shän.
Tientsin, tē-ĕnt′sēn.
Tierra del Fuego, tē-ĕr′rä dĕl fwā′gō.
Tiflis, tĭf-lēs′.
Tigris, tī′grĭs.
Timbuktu, tĭm-bo͝ok′to͞o.
Timor, tē-mōr′.
Titicaca, tĭt-ē-kä′kä.
Tocantins, tō-kän-tēns′.
Tokyo, tō′kē-ō.
Toledo, tō-lē′dō.
Tolima, tō-lē′mä.
Tombigbee, tŏm-bĭg′bē.
Tonga, tŏn̤′ga̤.
Topeka, tō-pē′ka̤.
Toronto, tō-rŏn′tō.
Torrens, tŏr′rĕnz.
Tortola, tôr′tō-lä.
Toulon, to͞o′lōɴ.
Toulouse, to͞o-lo͞oz′.
Trans-Caucasia, -ka̤-kā′shĭ-a̤.
Transvaal, trăns-väl′.
Trieste, trē-ĕst′a̤.
Trinidad, trĭn-ĭ-dăd′.
Tripoli, trĭp′ọ-lĭ.
Tucson, tū-sŏn′.
Tulare, to͞o-lä′rē.

Tunis, tū′nĭs.
Turin, tū′rĭn.
Turkestan, to͞or-kĭs-tän′.
Tutuila, to͞o-twē′lä.

Ucayali, o͞o-kī-ä′lē.
Uinta, ū-ĭn′ta̤.
Ujiji, o͞o-jē′jē.
Ukraine, ū′krān.
Upolu, o͞o-pō-lo͞o′.
Ural, ū′räl.
Uruguay, o͞o-ro͞o-gwī′.
Uspallata, o͞os-pä-yä′tä.
Utica, ū′tĭ-ka̤.

Valdai, väl′dī.
Valencia, va̤-lĕn′shĭ-a̤.
Valparaiso, väl-pä-rī′sō.
Vancouver, văn-ko͞o′vẹr.
Venezuela, vĕn-ẹ-zwē′la̤.
Venice, vĕn′ĭs.
Vera Cruz, vā′rä kro͞os′.
Verde, vẽrd.
Verkoyansk, vĕr-kō-yänsk′.
Vermilion, vẹr-mĭl′yŭn.
Verona, vẹ-rō′na̤.
Versailles, vĕr′sä′y’.
Vesuvius, vĕ-sū′vĭ-ŭs.
Vienna, vē-ĕn′a̤ (Aus.).
Vincennes, vĭn-sĕnz′.
Virginia, vẹr-jĭn′ĭ-a̤.
Vistula, vĭs′tū-la̤.
Viti Levu, vē′tē lā′vo͞o.
Vladivostok, vlä-dē-vōs-tōk′.
Volga, vŏl′gä.
Vosges, vōzh.

Wabash, wa̤′bash.
Wachusett, wa̤-chū′sẹt.
Waco, wā′kō.
Wadai, wä′dī.
Wales, wālz.
Warsaw, wa̤r′sa̤.
Wasatch, wa̤′săch.
Waterloo, wa̤-tẹr-lo͞o′.
Weihaiwei, wā-ē-hī-wā′ē.
Welland, wĕl′a̤nd.
Wellington, wĕl′ĭng-tọn.
Wenner, vā′nẹr.
Westminster, wĕst′mĭn-stẹr.
Wichita, wĭch′ĭ-ta̤.
Wilkesbarre, wĭlks′băr-ĭ.
Willamette, wĭl-ä′mĕt.
Wilmington, wĭl′mĭng-tọn.
Winnebago, wĭn-ē-bā′gō.
Winnemucca, wĭn-ē-mŭk′a̤.
Winnepesaukee, wĭn-ē-pẹ-sa̤′kē.
Winnipeg, wĭn′ĭ-pĕg.
Winona, wĭ-nō′na̤.
Winooski, wĭ-no͞os′kĭ.
Wisconsin, wĭs-kŏn′sĭn.
Woonsocket, wo͞on-sŏk′ẹt.
Worcester, wo͝os′tẹr.
Wyoming, wī-ō′mĭng.

Yablonoi, yä-blō-noi′.
Yadkin, yăd′kĭn.
Yakima, yăk′ĭ-mä.
Yakutsk, yä-ko͞otsk′.
Yangtze, yăng′tsē.
Yarkand, yär-känd′.
Yazoo, yä-zo͞o′.
Yenisei, yĕn-ē-sā′ē.
Yesso, yĕs′sō.
Yokohama, yō-kō-hä′mä.
Yonkers, yŏn̤k′ẹrs.
Yosemite, yō-sĕm′ĭ-tē.
Yucatan, yo͞o-kä-tän′.
Yukon, yo͞o′kŏn.
Yuma, yo͞o′mä.

Zacatecas, zäk-a̤-tā′ka̤s.
Zambezi, zäm-bā′zẹ.
Zambezia, zăm-bē′zē-a̤.
Zamboanga, zäm-bō-än̤′gä.
Zanesville, zānz′vĭl.
Zante, zän′tā.
Zanzibar, zän′zĭ-bär.
Zuider Zee, zoi′dẹr zā′.
Zululand, zo͞o′lo͞o-la̤nd.
Zurich, tsū′rĭk.

LOUISIANA

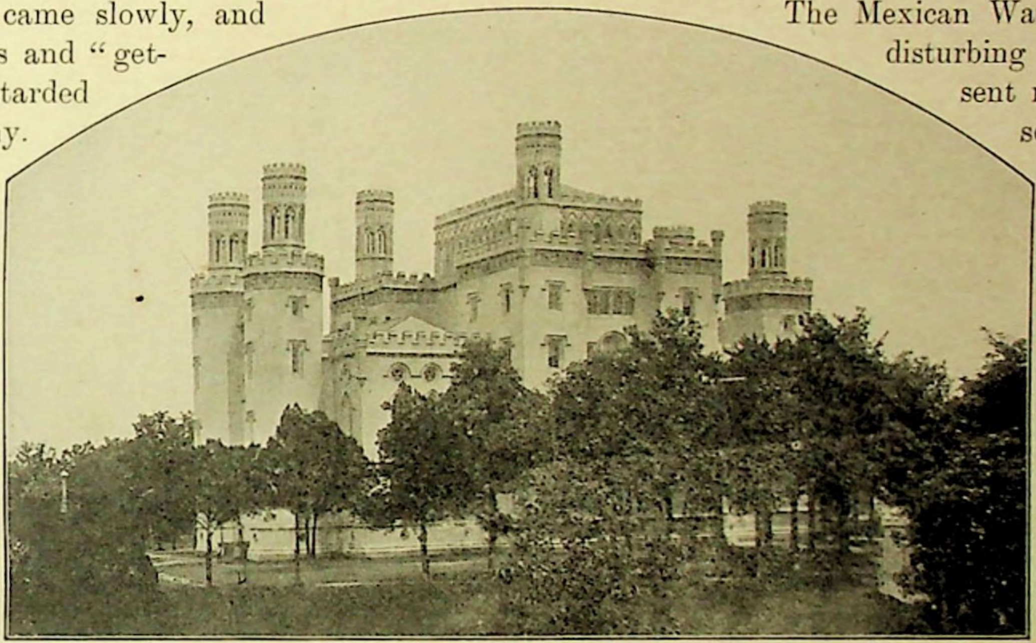
By GEORGE WILLIAMSON

Teacher of Biology and Physiography, State Normal School, Natchitoches, Louisiana

1. History

Louisiana was named for Louis XIV of France, by the adventurous La Salle, who, in 1682, followed the long water trail from the St. Lawrence river through the Great Lakes, and down the Mississippi river to the gulf of Mexico.

The first settlement in what is now Louisiana was merely a trading post at Natchitoches, founded about 1712 by St. Denys, in an attempt to open trade with Mexico. Bienville founded New Orleans in 1718; its history shows his wisdom in the selection of a site for settlement. Settlers came slowly, and numerous Indian wars and "get-rich-easy" schemes retarded the growth of the colony. In 1762 France, burdened with serious troubles nearer home and loath to see the colony fall into the hands of the hated English, ceded the territory to Spain, to the great sorrow and humiliation of the colonists. It never became Spanish in interest or intent, and was ceded back to France in 1800. At about this time the English-speaking settlers of the Mississippi valley began to demand the opening of the great river to commerce. President Jefferson, aided by peculiar conditions in Europe, found little difficulty in buying the magnificent territory of unknown extent, then known as Louisiana. The purchase was made in 1803, for $15,000,000.[1] Territorial government was soon established in the part now forming the state west of the Mississippi. In 1810 that part of the state east of the river (which, having belonged to Florida, is often called the "Florida parishes") was united to the western portion, and in 1812 admitted into the Union with W. C. C. Claiborne as governor.



State Capitol, Baton Rouge

Soon afterwards, during the war between the United States and Great Britain, a large English force was sent against New Orleans. Here, on January 8, 1815, one of the most memorable battles in our entire history was fought under Andrew Jackson. It resulted in a glorious victory for the United States.

For a long time indigo and tobacco were the main crops, but the invention of the cotton gin, and the discovery of the process of granulating sugar by Étienne de Boré, in 1794, led to a rapid change. Hundreds of great plantations were now devoted to the production of the more valuable crops, cotton and sugar. Steamboats soon began to ply every stream, attention was turned to the levees, the public-school system was organized, immigration was encouraged and peace and prosperity blessed the land.

The Mexican War again brought about disturbing times, and Louisiana sent many of her sons, who served their country with distinction.

On January 26, 1861, the state seceded from the Union and joined the Confederacy at Montgomery, Alabama, February 9, 1861. The heroism of her sons and daughters in the war that followed is a glorious heritage to her children. More than one battle was fought upon her soil, and invading fleets entered her ports. During the latter part of the war, as the Federal forces had occupied the lower part of the state, the Confederate capital was removed to Opelousas, Alexandria and finally to Shreveport. New Orleans was the Federal capital. Henry Watkins Allen was governor of the Confederate portion and Michael Hahn of the Federal portion. Although readmitted into the Union in 1868, the troublous reconstruction period, which lasted until 1877, greatly retarded the state's development. The building of the jetties, in 1879, and putting the control of the levees into the hands of both national and state governments (after the terrible floods of 1882) gave new energy to an ever-courageous people.

The adoption of the 1913 Constitution finally put the state on a sound basis, financially and educationally. Among its wisest provisions are those eliminating ignorant voters by a property-holding or educational test, and the encouragement of manufacturing and railroad building through exemption from taxation for a limited period.

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[1] Principal sum, $15,000,000; interest to redemption, $8,529,353; claims of citizens of United States against France and assumed by the United States, $3,738,268.

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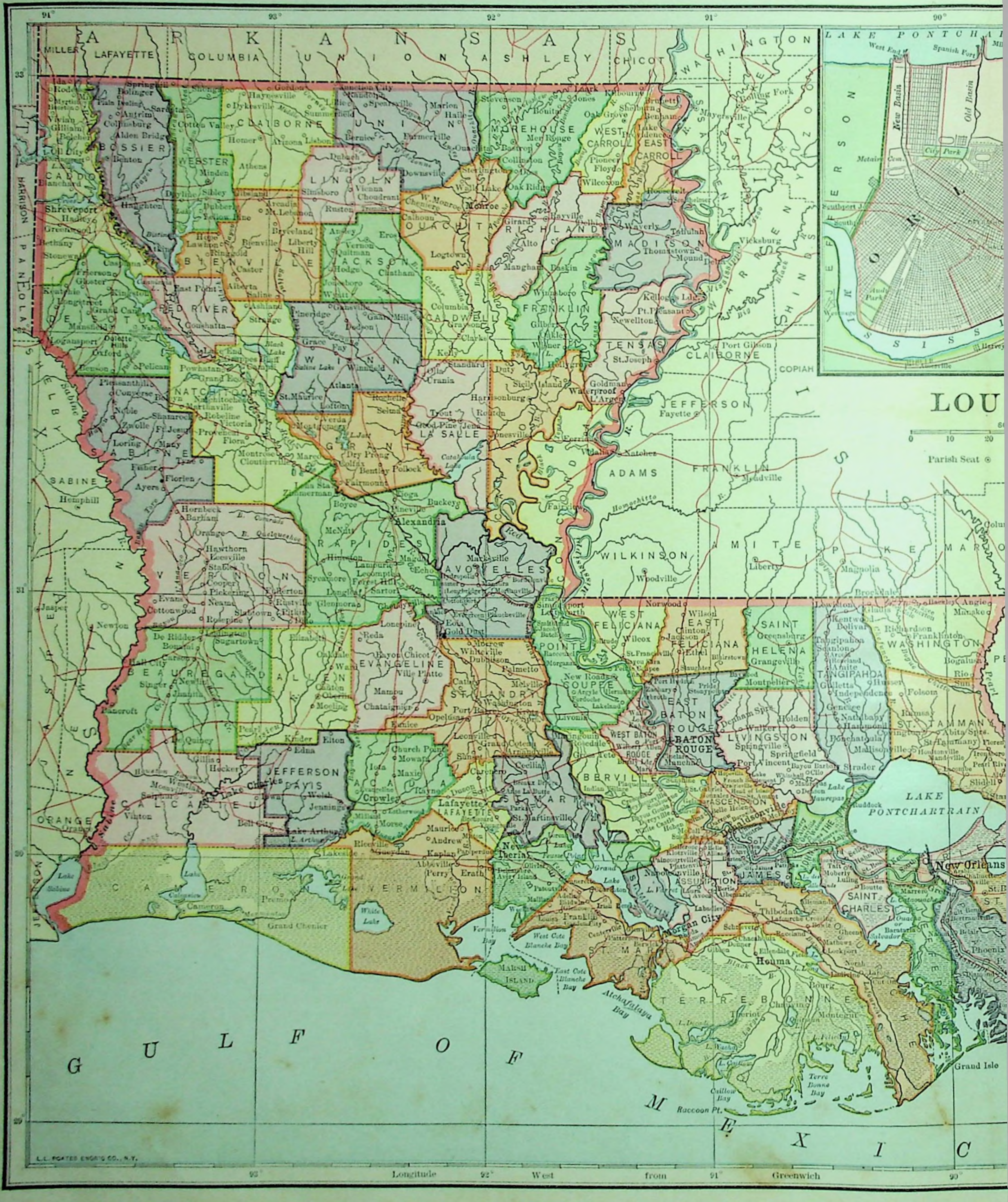

LOU
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Parish Seat ⊙
A R K A N S A S
MILLER
LAFAYETTE
COLUMBIA
U N I O N
A S H L E Y
CHICOT
WASHINGTON
CADDO
BOSSIER
WEBSTER
CLAIBORNE
UNION
MOREHOUSE
WEST CARROLL
EAST CARROLL
LINCOLN
OUACHITA
RICHLAND
MADISON
BIENVILLE
JACKSON
CALDWELL
FRANKLIN
TENSAS
DE SOTO
RED RIVER
WINN
NATCHITOCHES
SABINE
GRANT
LA SALLE
CATAHOULA
CONCORDIA
VERNON
RAPIDES
AVOYELLES
BEAUREGARD
ALLEN
EVANGELINE
ST. LANDRY
POINTE COUPEE
WEST FELICIANA
EAST FELICIANA
SAINT HELENA
TANGIPAHOA
WASHINGTON
CALCASIEU
JEFFERSON DAVIS
ACADIA
LAFAYETTE
ST. MARTIN
IBERVILLE
WEST BATON ROUGE
EAST BATON ROUGE
LIVINGSTON
ST. TAMMANY
ASCENSION
ASSUMPTION
ST. JAMES
SAINT CHARLES
CAMERON
VERMILION
IBERIA
ST. MARY
TERREBONNE
LAFOURCHE
Shreveport
Monroe
Alexandria
Baton Rouge
New Orleans
Lake Charles
Houma
Morgan City
LAKE PONTCHARTRAIN
Marsh Island
Atchafalaya Bay
Vermilion Bay
Grand Isle
Raccoon Pt.
G U L F O F M E X I C
Mississippi R.
Red R.
Sabine R.
WILKINSON
AMITE
PIKE
ADAMS
JEFFERSON
CLAIBORNE
FRANKLIN
COPIAH
NEWTON
ORANGE
JASPER
SHELBY
PANOLA
HARRISON
Vicksburg
Natchez
Woodville
LAKE PONTCHARTRAIN
M I S S I S S I
JEFFERSON
West End
Spanish Fort
City Park
Audubon Park
33°
32°
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29°
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92°
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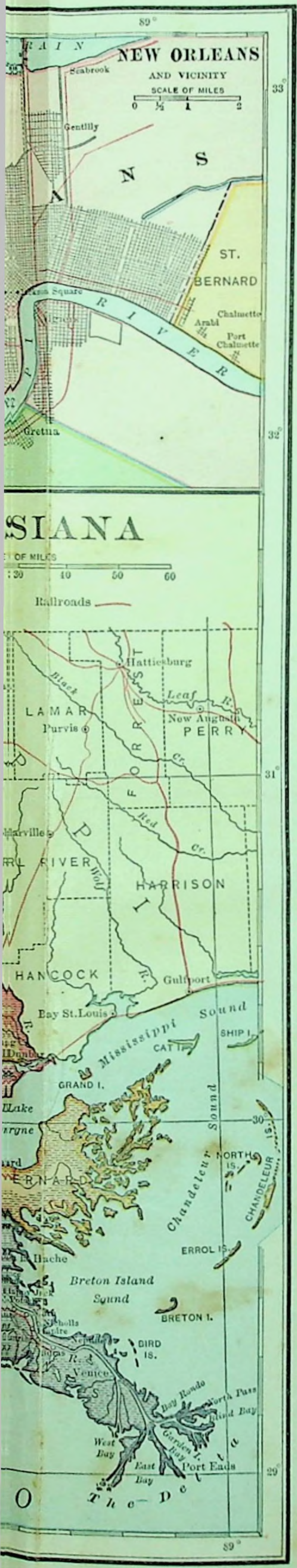
L.L. POATES ENGR'G CO., N.Y.
Longitude West from Greenwich



2. Location

The state of Louisiana lies between 29° and 33° north latitude and 89° and 94° west longitude. It is bounded on the north by Arkansas and Mississippi; on the east by Mississippi and the gulf of Mexico; on the south by the gulf of Mexico; and on the west by Texas. Its natural boundaries are the Mississippi and Pearl rivers on the east, the gulf of Mexico on the south and the Sabine river on the west.

Skirting the eastern and southern coasts are a number of islands, some mere sand bars, while others are timbered and form the homes of countless sea birds, and occasionally of man. The distance across the state in the south is about 325 miles; in the north, about 160.

3. Surface and drainage

Louisiana has an area of 48,506 square miles, of which over 3000 square miles consist of landlocked bays, lagoons, bayous and rivers.

The surface is divided into three drainage areas,—western, central and southeastern. The western watershed lies between the Sabine and Red rivers in the northern part, its waters flowing into these two streams until Avoyelles parish is reached, where the general direction of the drainage is southward, towards the gulf. The highest points in this area are in De Soto parish,—321 feet at Mansfield, 338 feet at Keatchie.

The central watershed lies between the Red and Ouachita rivers. Broad in the north, it converges to the junction of these rivers with the Mississippi. The highest point in this area, so far measured, is 484 feet at Athens, in Claiborne parish.

The third drainage area of importance is in that portion of the state lying east of the Mississippi river; and it slopes from the Mississippi state line southward to lakes Pontchartrain, Maurepas and Borgne. Across the entire southern portion of the state stretches the great marsh region, penetrated from the north by sluggish bayous laden with silt, which, deposited among the marsh grasses and the landlocked bays, is slowly encroaching upon the sea.

The Red and Mississippi rivers, at times swollen to enormous proportions by the waters of their tributaries in the central and western states, flowing with great velocity, are constantly cutting new channels through the light alluvial soil. The oxbow "cut-offs" form a beautiful and interesting feature of the lake scenery of Louisiana. Another interesting feature is that the high lands or front lands lie along the banks of the streams, while the swamps lie a mile or more back.

The delta of the flood plain of the Mississippi is in this state, and Louisiana has more miles of navigable streams, with a larger area of alluvial land, than any other state in the Union.

Just above the junction of the Mississippi and Red rivers, the Atchafalaya flows from the latter, carrying a large quantity of water directly to the gulf. Near this are bayous Lafourche and Teche; and west are three streams of considerable importance, the Vermilion, the Mermentau and the Calcasieu rivers.

The lakes of Louisiana may be divided into two distinct groups. Those near the rivers are probably formed by erosions and depositions, the waters acting somewhat like the glaciers of the north. The coastal lakes are formed by depositions and recessions of the bayous and sea.

4. Soil

The soil of Louisiana may be divided into eight groups, with very different characteristics. These are the Marsh lands, the Alluvial lands (along the rivers), the Cypress lands, the Long-Leaf Pine hills, the Long-Leaf Pine flats, the Bluff lands, the Uplands and the Prairie lands.

For agricultural purposes the soil may be grouped again as follows:

1. The *Alluvial lands* lie along the principal rivers and marshes. They comprise about one third of the total area of the state, and, where drained and leveed, are among the most productive in the world.

2. The *Bluff soils* form a peculiar narrow strip extending through the entire eastern part of the state, and embrace more than 200,000 acres. This soil is light colored, easily tilled and very fertile.

3. The *Uplands* may be subdivided into the light sandy lands, easily exhausted by poor tillage, the larger areas of yellowish loam and the very productive red, sandy clay lands.

4. The *Long-Leaf Pine region* is divided into two sections: the larger in the central and western parts of the state; the smaller in the southeastern part, adjoining Mississippi. These two sections, besides furnishing immense quantities of valuable pine timber, are generally fertile and contain some of the best land in the state.

5. The *Prairie region*, sometimes called the Attakapas country, includes St. Landry and Acadia parishes and parts of Vermilion and St. Martin parishes, and is famous in history and poetry as the land of the Acadians. It is well watered by slow-moving bayous, bordered with trees and covered with abundant vegetation. For a long time this region did not attract much attention, except for small farms and great pastures. Recently, however, a better knowledge of the peculiar soil (generally gray in color) has brought about a remarkable change, and no portion of the state has developed more rapidly.

Elevator at salt mines, Avery Island

To the geologist or student of agriculture Louisiana presents a most interesting study. Her youth in the great creative work of earth building is shown by the numerous fossil-covered hills, the marl beds and the veins of lignite which the well-digger so frequently strikes. Her only scars seem to be those made by the water to which she so largely owes her existence.

Geologic Summary

Quaternary. — Recent beds, and alluvium of sand, soil drift. Fossils of living organisms.

Tertiary. — Sand, clay, limestone, marl. Fossils of extinct marine forms.

Cretaceous. — Limestone and marly clay. Fossils and extinct sea shells.

5. Minerals

The mineral resources of Louisiana, once considered of little value, have attracted world-wide attention during the past ten years.

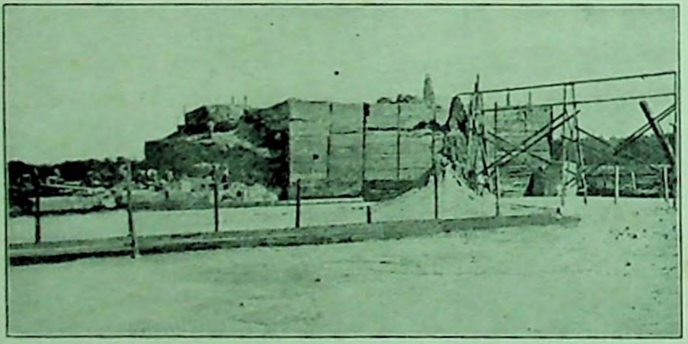
Vast beds of pure salt, sometimes 2000 feet thick, underlie great portions of the state from Winn parish southward, culminating in Iberia and St. Mary parishes. Salt mining has been carried on actively for many years at Avery Island and Weeks Island. The salt is often removed in great lumps containing over 1000 pounds of pure rock salt. At the present time the industry is greatly hampered by poor transportation facilities, but it will be of very great importance when factories are built for making soda and other products. The salt found in Louisiana is pure and does not have to be cleaned or refined, but merely crushed and graded. It can be mined more cheaply here than in any other place in America.

The sulphur mines near Lake Charles, Calcasieu parish, will long rank among the wonderful mineral discoveries of the world. Since the invention of the Frasch system of extracting the pure sulphur from the porous rock 250 to 500 feet below the surface of the earth, Louisiana has produced three fourths of the world's supply of sulphur from mines.

By the Frasch system superheated water is forced down through galvanized-iron pipes sunk into the soft rock. For the entire process two smaller pipes are inclosed in each hot-water pipe. As the sulphur will not mix with the water, air is pumped down through a smaller pipe, the innermost of the three pipes, and then for fifteen or twenty days a steady stream of pure liquid sulphur pours out of the second pipe into immense wooden tanks. Here it cools rapidly, and the mass is broken up by pick or blasted for shipment.

The sulphur mines of Louisiana are valued at more than all the other mineral resources of the state.

The discovery of oil at Jennings in 1900 led to the boring of many fine "gushers," as the flowing wells were called. The success of the oil industry led to extensive attempts at development elsewhere near Jennings, but it was several years before the great gas and oil fields of Caddo parish, near Mooringsport, were discovered. In a few years another great field of oil and gas was opened up near Naborton in De Soto parish, and this was followed by the opening of a new field of great value in Red River parish between Coushatta and Shreveport. In this last area wells are being bored in the bed of Red river. Through these discoveries Louisiana has advanced to the fifth place in the production of oil and has probably the best gas field in the United States. From the Caddo gas fields Shreveport and other cities have a good supply for all purposes. The De Soto field is also piping gas to many large towns and cities. A great pipe line has been built from Caddo to Baton Rouge, where there is a large refinery employing 2000 men. From here Louisiana oil goes direct to all parts of the world.



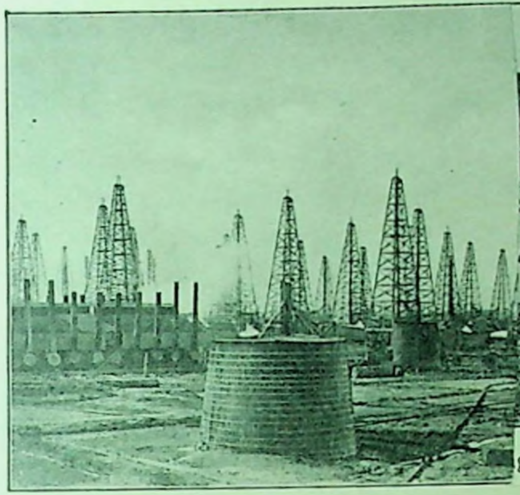
Sulphur mine

In Winn parish large beds of an excellent quality of limestone are found. Some of this stone has also been found in Evangeline parish.

Sandstone in paying quantities and good for concrete work is found in Natchitoches, Rapides and Vernon parishes and elsewhere.

With the increased use of concrete many valuable beds of gravel have become commercially important near Baton Rouge, Monroe and Alexandria and at several other points having rail or water transportation.

Good clay for brickmaking and pottery is abundant, and a high grade of pressed brick is made in several parts of the state.


Crowley oil field

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A very fair quality of lignite underlies much of the northern part of the state. An outcrop seven feet thick has been found in the Dolette hills of De Soto parish.

Owing to the demand for fuel, this soft coal before many years will doubtless be utilized by compressing it into "briquettes," as the artificially pressed cakes of coal are called.

Beds of marl and gypsum, both suitable for fertilizers, are found.

The greater part of the state has an ample supply of good drinking-water, and mineral springs of more than local value are numerous.

6. Climate

The summers in Louisiana are long, but the heat is modified by cooling south winds or breezes from the gulf and is never excessive for many days in succession. In the northern part of the state the temperature rarely exceeds 98° Fahrenheit or falls much below the freezing point, about 45° being the average for winter. Snow falls here nearly every winter, but it rarely remains upon the ground more than a few hours. In the latitude of Shreveport the first killing frost occurs usually about November 10; the last, about March 15.

In the southern part of the state the mean winter temperature is about 57°. Snow falls about once in five years, and in some years the freezing point is not reached. The last killing frost in this part of the state occurs in January; the first, some time in December.

The lowest temperature on record for the northern part of the state is 5° below zero at Shreveport, and for the southern part 7° above zero in New Orleans.

The rainfall of Louisiana is abundant and well distributed; the average for the northern part is 45 inches per annum, and for the southern part 60 inches. Owing to its geographic position the rainfall of southern Louisiana is somewhat greater during the summer months than at other times, while in the northern part of the state December, January and February are usually the rainy months. The fall and spring are delightful and fairly dry. This state is fortunate in its climate, for only rarely is the summer's sun or the winter's cold severe enough to prevent work in the open air. It is possible to plant or harvest some crop every month in the year.

7. Animal and Plant Life

Animals. Wild animals are still plentiful in the great swamps, canebrakes and forests of Louisiana. The beaver is rare now, but the bear, wolf, fox, wild cat and otter are comparatively common, while the deer, mink, rabbit, squirrel, raccoon, pouched gopher and opossum are abundant.

Muskrats infest the streams and waters of southern Louisiana and often do damage to the levees. The trappers are reported to have taken four million muskrats in one season, and these, with the skins of mink, otter, raccoon and other animals, bring returns annually of over $2,000,000.

Both fresh-water and salt-water fish are abundant.

Birds. Since the days of Audubon the birds of this state have attracted great attention from the student of bird life. The mainland, with its diversity of woodland and prairie, furnishes an ideal home for an exceptionally large variety of birds, resident and migratory, and the marshes, the lagoons and the low islands along the coast literally teem with swimmers and waders. The mild climate and the abundant food from marsh and sea offer attractions to the migrating birds which twice a year pass in countless numbers through the state.

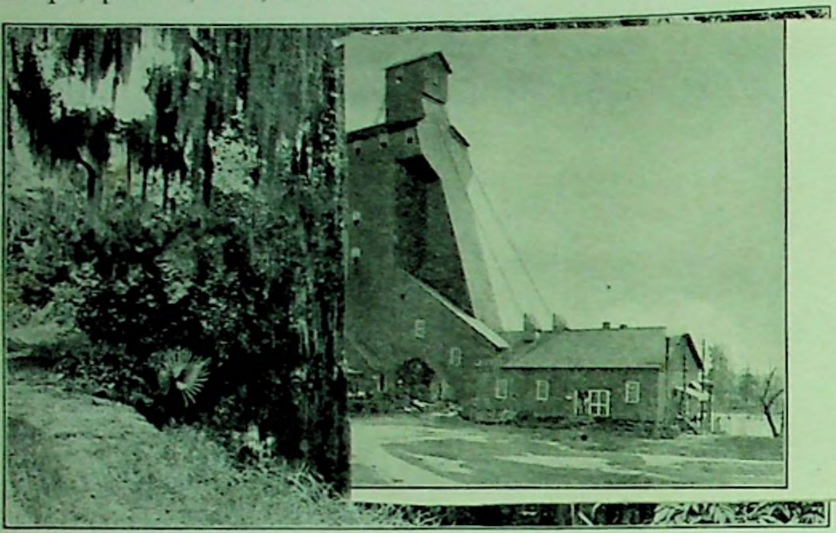
The common resident birds are the mocking bird, bluebird, meadow lark, killdeer, bob white, blackbird, wren,

asparagus, spinach, beets, bur artichokes, lettuce and celery. Many of these vegetables grow in the open air throughout the winter, and

Lumbering in a Louisiana forest

jaybird, sparrow, hawk, owl, wild turkey, dove, thrush, prairie hen, two kinds of ducks and an occasional eagle.

The migrants include the robin, ricebird, catbird, warblers, oriole, kingbird, crane, duck, goose, swan, brant, snipe, plover, rail, cormorant, ibis and heron.



Louisiana swamp

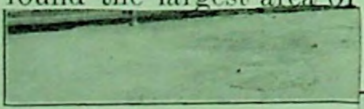
The economic importance of protection of birds against extermination is arousing much interest. Near Avery Island bird refuges of about 250,000 acres, which have been given the state, offer rendezvous for innumerable marsh and water birds, the white egret alone numbering over 100,000 grown birds. These, with other places maintained by the state for the preservation of birds, bid fair to cause Louisiana again to be called, as in years gone by, the "sportsman's paradise."

Forests. More than one half of Louisiana is covered by forests. Thousands of acres are heavily timbered with pine and bald cypress, two of the most important woods in the United States. The short-leaf and loblolly pines are found generally in the higher portions of the state, but the long-leaf pine covers a part of nine parishes in the center and west, and four parishes in the southeastern part of the state. Spruce pine, also, grows in the latter section. The red cypress, though scattered through the lowlands of the state, is more abundant south of the Red river and west of the Mississippi. Here is found the largest area of

living organisms.

Tertiary. — Sand, clay, limestone, marl. Fossils of extinct marine forms.

Cretaceous. — Limestone and marly clay. Fossils and extinct sea shells.



Sulphur

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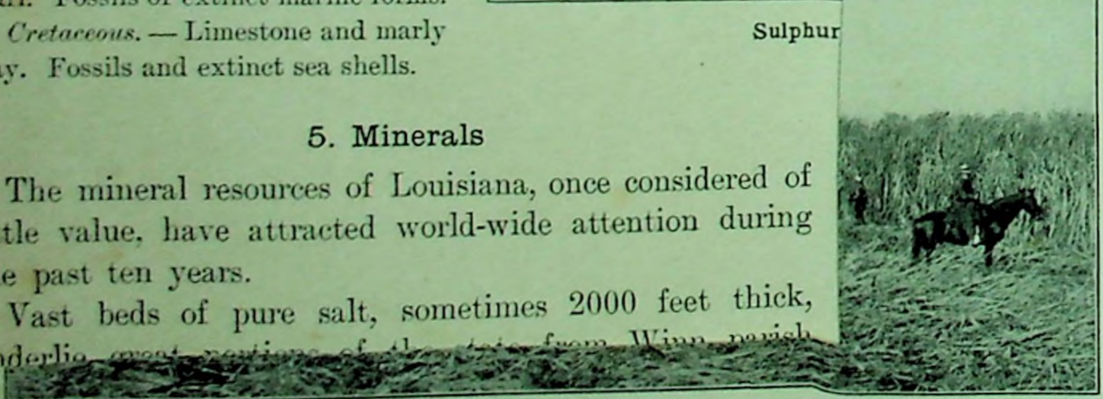
Vast beds of pure salt, sometimes 2000 feet thick,



Harvesting sugar cane

Other trees of primary value are the white oak, red oak, basket oak, live oak, hickory, pecan, ash, black gum, poplar, walnut, red cedar (juniper), persimmon, sycamore and cottonwood. Of less importance commercially are the sassafras, elm, maple, beech, magnolia, holly, locust, hackberry, plum, hawthorn, cherry, chinquapin and mulberry.

The tillandsia, or Spanish moss, which so beautifully festoons many of the forest trees of the lowlands, is a valued product of the swamps. After being immersed for a time in water it is baled and shipped to the cities, where it is used as a substitute for hair in the manufacture of mattresses and furniture.

Dewberries and blackberries abound, and through the woods great grapevines, especially the muscadine, bear quantities of luscious fruit. The beauty of the woodlands is intensified by the gorgeous red and yellow of the trumpet vine and the cross vine, the yellow of the jessamine, and the delicate pink of the azalea, or wild honeysuckle. The woods have an unending season of flowers, the lakes and ditches are filled with lilies and aquatic plants, and in shady nooks are wonderful ferns and orchids.

8. Agriculture

The corn crop has outstripped all other crops in value. It now exceeds 50,000,000 bushels, with a farm value of about 60 cents per bushel. This is one of the most encouraging signs for better farming that Louisiana has shown in years.

The oat crop, once of little account, has increased enormously in quantity, and in 1915 amounted to 2,500,000 bushels. Corn and oats can be grown all over the state.

Growing corn

Cotton was for a long time the leading crop. Owing to the ravages of the boll weevil and to increased interest in stock-raising and diversified farming, it is now grown in smaller quantities, although probably with more profit than ever before. The crop for 1914 was 427,000 bales, making Louisiana rank as the ninth state in cotton production. The seed used for oil, meal, linters and hulls adds greatly to the farmers' revenue. The farm value of a bale of cotton, together with the seed, is seventy dollars. Cotton can be grown all over the state, but the portion more exclusively devoted to it lies west of the Mississippi from St. Landry parish northward. The parishes leading in cotton culture are St. Landry, Evangeline, Avoyelles, Pointe Coupee, Caddo, East Feliciana, Rapides and Tensas.

Louisiana has been growing cane for the manufacture of sugar and sirup for over one hundred and twenty-five years and now produces nine tenths of all the cane sugar made in the United States. The cane-growing area embraces twenty-eight parishes from Rapides southward, the leading ones being St. Mary, Lafourche, Assumption, Iberville and Ascension. Cane in limited quantities may be grown in almost every section.

Centrally located refineries have replaced the old-time sugar mill, and special apparatus has been devised for handling the cane and for loading cars. The cane is often shipped fifty or a hundred miles to be ground. The southern Louisiana planters make very little sirup, their products being mostly sugar and a cheap molasses used for stock feed; but all through the central and northern parts of the state increasing attention is being given to the growing of cane for sirup making. Several parishes produce at a good profit many thousand gallons of a delicious table sirup.

Threshing rice, Crowley

The fourth great crop is rice. Since the opening up and development of the southwestern part of the state, the rice crop has brought to this locality thousands of desirable immigrants, and a once almost unknown section has thus been converted into a beautiful and productive country with a great future. The state now produces about half the rice grown in the United States. Besides the rice itself the straw, bran and polish are utilized to advantage. Rice growing is largely confined to the southwestern parishes, although it is still grown to some extent nearer the Mississippi. The parishes of Calcasieu and Vermilion are the leading producers. Crowley, in the parish of Acadia, is the center of a large milling industry, ten large mills being at this place. The crop is harvested by machinery similar to that used in the West for wheat. As the rice fields have to be irrigated with large quantities of water, great irrigation canals and pumping stations costing millions of dollars have become necessary.

Rice field showing irrigation ditches

Great quantities of sweet potatoes, Irish potatoes, peanuts, sorghum, hay, millo maize and sugar beets are grown throughout the state. Forage crops have increased greatly in quantity and in quality. Wheat in sufficient amounts to export by the carload has been raised lately.

Some localities, especially the stiff soils along Red river, seem particularly adapted to the growth of alfalfa. The average yield is from four to six "cuttings" per season, each cutting yielding a ton per acre. When well started the crop grows for years without replanting. Those sections not suited to alfalfa will, with a little care, produce good crops of lespedeza.

Tobacco of a very fine quality — perique — is grown in St. James and one or two other parishes.

With the increasing facilities for rapid transportation, supplied by nearly 5000 miles of railroad, truck growing is now an important source of revenue for the people of the state.

North and east from Rapides, Irish potatoes, tomatoes, cabbage, turnips, peas, mustard, onions and melons are the chief vegetable crops. To the south, especially around New Orleans, a much larger variety of vegetables is grown, including garlic, cauliflower, asparagus, spinach, beets, bur artichokes, lettuce and celery. Many of these vegetables grow in the open air throughout the winter, and

Rice growing in Crowley

Pecan orchard at Mound

it would be a poor garden, even in the northern part of the state, that could not furnish five kinds of fresh vegetables in January.

East of the Mississippi the soil is peculiarly adapted to early vegetables, and here the state's greatest truck-growing and dairying region is developing. Besides the shipment of hundreds of carloads of early peas, beans, radishes, lettuce and tomatoes, great quantities of fine strawberries are sent in refrigerator cars to all the great cities. In this section the trucking industry is systematized, the buyers are on hand and the railroads coöperate. The returns to the truckers amount to several million dollars annually.

Increasing attention is being paid to fruit-growing in the northern tier of parishes between the Ouachita and Red rivers, especially where the red sand soils are found. The fruits are peaches, pears, plums, grapes, apples and melons.

The pecan, little more than an ornament a few years ago, is now an important and valuable tree. Great groves are being planted, and the finer grades of nuts, with the many thousand pounds produced by the wild trees, bring in no small revenue. It is not difficult to make the tree grow almost anywhere in Louisiana.

An orange tree in St. Bernard parish

The valuable orange groves were almost destroyed by the freezes of 1899 and later years, but they are once more becoming very productive. The parish of Plaquemines alone can furnish 65,000 boxes. The brown-skinned orange has a fine flavor and is of good size. Figs are easily grown almost everywhere in the state and are a safe crop south of Alexandria. Several varieties, preferably the Celeste, are grown for canning and for home consumption. Lemons, grapefruit (pomelo), bananas, Japanese persimmons, kumquats and guavas are grown to some extent.

Perique tobacco, St. James parish

The cultivation of ornamental plants for commercial purposes is becoming an important industry. New Orleans leads in this, but there are many nurseries elsewhere in the state which supply large numbers of fruit trees, roses and ornamental plants.

The growers around New Orleans sell hundreds of thousands of wonderfully fine chrysanthemums. These are frequently grown under glass, as are also potted plants, roses, lilacs and early vegetables.

Stock-raising and dairying are very profitable in Louisiana on account of the luxuriant pasturage and open winters. Cattle, horses, mules, hogs and sheep are raised in greatly increasing numbers.

The demands of thriving towns and cities are a strong stimulus to the dairy industry. Hammond and Stonewall easily lead all other places in supplying dairy products.

Louisiana produces annually several million dollars' worth of eggs and poultry for market, besides fancy fowls for breeding. In nearly every community this business is given some attention, but it succeeds best in the mild and open part of southern Louisiana.

9. Fishing and Oyster Industry

Louisiana has always paid some attention to fishing and to gathering oysters.

The fresh-water streams are abundantly supplied with bream, sunfish, bass, gaspergou, catfish and buffalo fish, not to mention the "grinner," or mudfish, and gars, which are much liked by many. Along the Atchafalaya and the adjacent waters the catching and packing of fish in ice for quick transit has become an important business.

Model dairy, Louisiana State University, Baton Rouge

The gulf and many inlets along the coast furnish a livelihood to many men who catch red snapper, redfish, pompano, sheepshead and Spanish mackerel, with New Orleans as a distributing point for other states. This industry amounts to over $2,000,000 annually. The more shallow waters also produce shrimp and crabs in enormous quantities. Both are sold fresh, but great quantities, especially of shrimp, are canned or dried. Many tons of dried shrimp go to China.

No portion of Louisiana seems so foreign as that inhabited by her fishing population. These people represent almost every sunny clime.

Under the direction of the Conservation Commission the natural oyster reefs of the state have been made second only to those of Maryland and Virginia. The oysters gathered from the reefs by oystermen in luggers are taken to New Orleans, Houma, Avery Island, and other points, where many hands are kept busy shucking (removing the shells) and canning the oysters. By the new sanitary methods, oysters for immediate use after shipment are packed in tin buckets surrounded by crushed ice.

Shingles made from cypress logs in the deep woods near Urania

The Conservation Commission sees to the proper allotment, rental, protection and replanting of the oyster beds.

The oyster industry gives employment to many thousands, and its development is a valuable addition to the state's resources. Owing to the abundance of food and the kind of water, the Louisiana oyster grows as large and toothsome in two or three years as its rival of Virginia or Maryland does in five.

In recent years large numbers of paddlefish, or "spoonbill cats," have been caught in the bayous and "cut-offs" of the South. This fish, which grows to a length of from four to five feet, is abundant, and the flesh, sold as sturgeon, is palatable. Of greater importance than the flesh are the eggs, or roe (twenty pounds to a fish being not uncommon), which, salted and packed in kegs, go to the northern markets as the Russian delicacy, caviar.

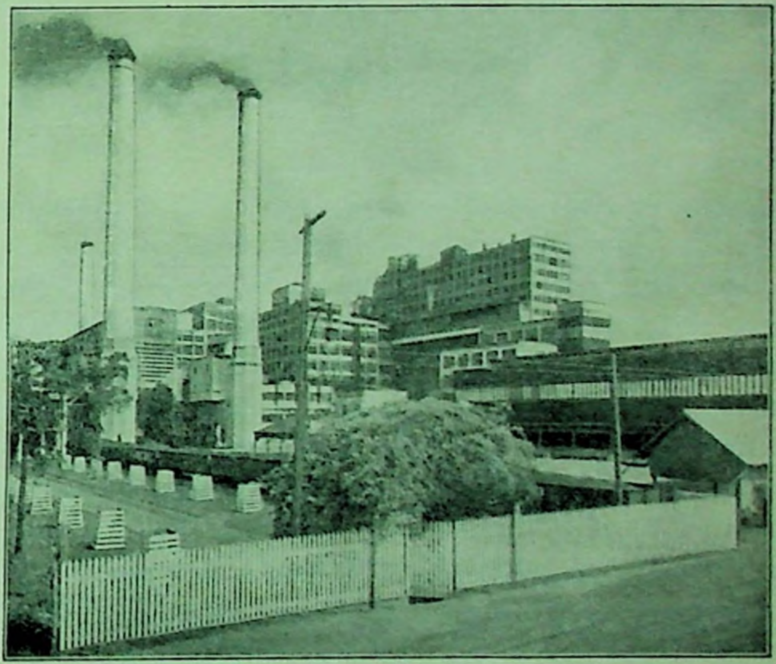
10. Manufacturing

Louisiana is fast learning the possibility of increasing her profits by manufacturing her own products. The output of manufactured products is greater every year, and to-day over 100,000 persons are employed in mills and factories. The manufacture of lumber and timber products comes first in value. Louisiana has for several years held her place as the second lumber-producing state of the Union, being surpassed only by Washington.

Sugar shed at New Orleans

One lumber mill alone, at Bogalusa, employs 3000 men, uses over 40 acres of pine daily, and saws under full run 1,000,000 feet of high-grade lumber a day. The by-products of this mill are converted into boxes, crates, laths, paper and alcohol. Another large mill is at Fullerton. Dozens of mills, cutting pine, cypress, oak and other woods, and employing from 300 to 1500 men, are scattered over the state, some owning extensive railroad lines for supplying their mills with logs.

Besides the heavy output of long-leaf and short-leaf pine, Louisiana ranks first in the cypress industry. Vast quantities of these pine and cypress trees, the cypress especially, are made into shingles, sashes, doors, blinds and boxes for local and export trade.


Sugar refinery at New Orleans

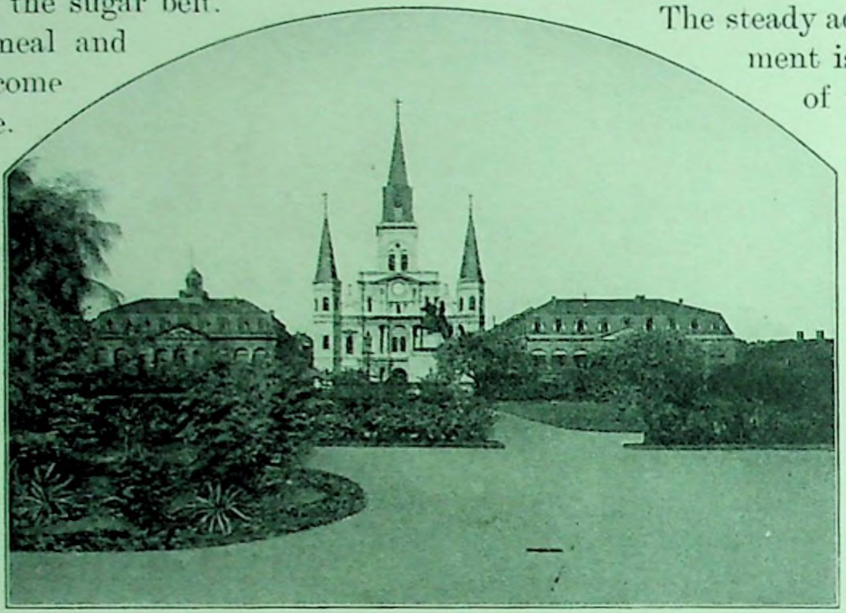
Oak is made into furniture, staves and crossties; ash, into oars and other articles; cottonwood, into crates for fruits and vegetables; hickory and pecan, into spokes, ax handles and tool handles. There is also a limited trade in such woods as walnut, persimmon and dogwood. Black gum, sold under the name of Circassian walnut, is rapidly coming into favor.

Factories are scattered somewhat generally over the state near where the lumber mills are located. New Orleans, Shreveport, Monroe, Plaquemine, Lake Charles and Mansfield produce many grades and large quantities of manufactured material. Creosoting telephone and telegraph poles is also a very important adjunct to the lumber industry.

Under modern methods of handling the trees, Louisiana now has several thousand acres of pine lands producing pitch, rosin and turpentine.

The making and refining of sugar and molasses is the industry second in importance in the state.

A sugar refinery at New Orleans, built at a cost of about $7,000,000, is the largest one in the world. It refines sugar not only from Louisiana but from other parts of the world. Besides this mammoth establishment there are a number of fine mills and refineries in the sugar belt.

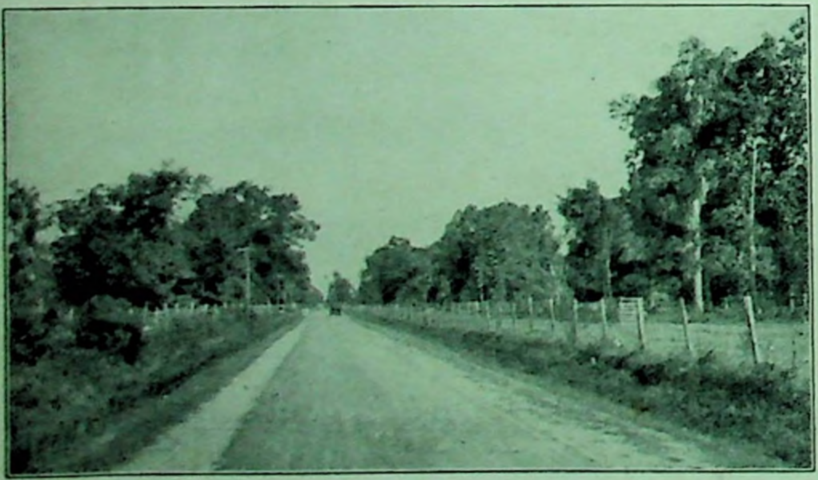


Jackson Square, New Orleans

The manufacture of oil, meal and linters from cottonseed has become the third industry in importance. Much of the oil and meal (or cake) is shipped abroad, where the oil is refined for cooking or for table use and the cake or meal used as a valuable stock food. Besides being an important food for nearly all kinds of animals, this meal is one of our most important fertilizers. Locally the refuse (or hulls) is fed to cattle.

Besides these larger industries there are rice mills for cleaning rice; machine shops; foundries; brickmaking and tilemaking plants; breweries; ice factories in increasing number and capacity; candy factories; cotton mills; factories for canning shrimp, oysters, fruits and vegetables; cigar, cigarette and tobacco factories; important furniture factories; fertilizer factories; and the immense oil refinery at Baton Rouge, with its pipe line reaching even to Oklahoma.

The use of by-products in all lines of manufacturing (as sawdust into alcohol and the cane refuse, or bagasse, into paper) has become a most important business.



Model gravel road in East Baton Rouge parish

11. Transportation and Commerce

Louisiana has about 4800 miles of navigable streams, exceeding in this respect any other state. Their importance is emphasized by the yearly strengthening of the levees, by the demand for cheaper transportation and by the renewed interest of the general government in the country's waterways.

The following rivers and bayous are navigable during some part of the year: for from 50 to 100 miles, the Amite, Black, Mermentau and Vermilion rivers and the Barataria, D'Arbonne, De Glaise and Teche bayous; from 100 to 500 miles, the Atchafalaya, Boeuf, Calcasieu, Little, Ouachita, Pearl, Sabine and Tensas rivers and the Bartholomew, Lafourche and Macon bayous and Catahoula Lake. The Red river is navigable for 510 miles, and the Mississippi for 560.

The steady advance of the good-road movement is adding much to the relation of town and country and the increased value of property and products.

The increasing activity in railroad improvement is probably due to three causes — the rapid agricultural, mining and manufacturing growth (especially the output of lumber and oil), the low cost of building and the great commercial activity of New Orleans since the completion of the jetties and the construction of the Panama Canal.

The principal railroads are the Texas and Pacific, the Southern Pacific, the Kansas City Southern, the Illinois Central, the St. Louis, Iron Mountain and Southern, the Louisiana Railway and Navigation, the Vicksburg, Shreveport and Pacific, the New Orleans and Northeastern, the Yazoo and Mississippi Valley, and the New Orleans Great Northern, besides a great number of shorter lines and "tap roads," making a total of 4631 miles in the state.

In 1890 there were 1740 miles of railway; in 1905 there were 4136. In 1906 alone 391 miles were built. That year only one state built more miles of railroad than Louisiana. The topography and the climatic conditions of Louisiana offer tempting inducements to transcontinental lines which carry large numbers of passengers and have a heavy traffic in perishable products.

Near New Orleans the lake trade is important and is greatly facilitated by the three canals — Old Basin, New Basin and Lake Borgne. The Intercoastal Canal, now under construction by the United States government, will give a water highway from Texas to the Atlantic.

The following figures give some idea of the state's commercial activities: in 1900 her manufactured products were worth $111,400,000; in 1915, more than $250,000,000. In 1915 individual deposits in banks were $81,600,000.

12. Cities and Towns[1]

New Orleans, the metropolis of the South and the second port of export in the United States, is situated on a bend (hence its name of "Crescent City") of the Mississippi river about 150 miles from its mouth. The population is about 365,000. This city is most fortunately located for trade supremacy. It is connected with the north, east and west by great trunk lines of railway; it has many inland waterways (of which the chief will be the great Intercoastal Canal), and it is convenient to the ports of Mexico, Central America, Cuba, Panama and South America. The jetties at the mouth of the river furnish safe and easy entrance for ships drawing thirty-five feet of water. The United States government has built near the city one of the largest dry docks in the United States.

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[1] The population figures given in this section are based on conservative estimates made in 1916.

New Orleans now ranks second in cotton export. It ranks first in the amount of lumber exported, and it ships vast quantities of staves and grain to Europe. Naval stores and products of the Mississippi Valley are sent from New Orleans to nearly all parts of the world. Ships coming in bring coffee, sugar, sisal grass, bananas, mahogany logs, nitrate of soda, fruits, nuts and manufactured products.

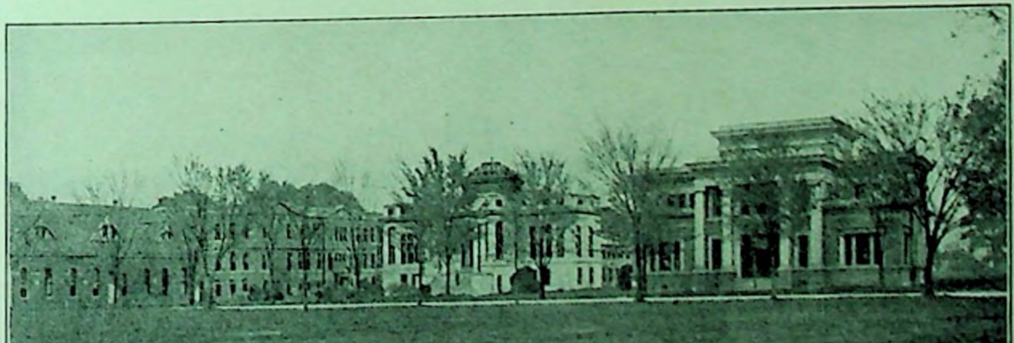
There are in the city about 850 manufacturing enterprises. They employ more than 25,000 persons and produce over 175 different articles, the total product exceeding $80,000,000 in value annually. Near the city is the largest sugar refinery of its kind in the United States.

H. Sophie Newcomb Memorial College

Among recent improvements along the river front are superior wharves, sheds and docks, and a huge cotton warehouse which covers one hundred acres. This is built of iron and steel, has every modern appliance and is to be increased to twice its present capacity of 2,000,000 bales.

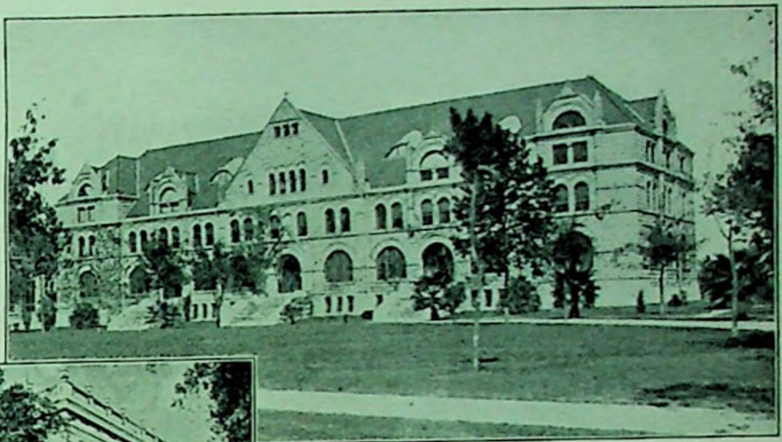
The water filtration plant built by the city insures its citizens an ample supply of pure, wholesome water. Large sums are being spent on the sewerage system, and New Orleans now ranks high among the healthful cities of America.

The city has two beautiful parks — Audubon Park and City Park — a number of attractive squares and several desirable pleasure resorts easily reached by electric cars, where boating and fishing may be enjoyed. There are also good theaters and the famous French Opera House. Some of the hotels and restaurants are of national reputation.


Louisiana State University, Baton Rouge

Tulane University is located in New Orleans. Besides schools of law, medicine and science the University includes the H. Sophie Newcomb Memorial College for Women. In the city there are many private schools, art and music schools, business schools and first-class colleges. There are excellent charitable institutions supported by public-spirited citizens, and also fine hospitals and sanitariums. Over 1000 teachers are employed in the public schools, which are progressive and well supervised and include a city normal school.

The State Museum is here in the old Cabildo; and, besides the Howard Library, the Carnegie Library and the public library with its branches, the city has many imposing buildings and beautiful churches.


Tulane University

One of the most famous churches is the old St. Louis Cathedral, the seat of the Archbishop of New Orleans. The Delgado Art Museum, a recent gift to the city, is in City Park.

New Orleans has a larger area for its population than any other city in the United States and has over 200 miles of streets. A well-planned electric-car system makes any part of the city easily accessible. The climate is very pleasant. The temperature rarely exceeds 95° or falls below freezing. New Orleans is famous for its hospitality and culture, and, even with its present business activity, it preserves much of its old social charm and half-foreign character, which make it so different from any other American city.

Baton Rouge is the capital of the state, and the third city in size. Its population is 19,000. It is situated on the first bluffs of the Mississippi river, about 100 miles above New Orleans. The bluffs, which are about twenty feet high, free the greater part of the city from danger of overflow. The State University and State Institutes for the Blind and for the Deaf and Dumb are located here. The city has good hotels, several banks, electric-car lines, ice plants, oil mills, fertilizer factories, brickyards and lumber mills. The great oil refinery, with pipe lines from Oklahoma and northern

Louisiana, represents a local investment of about $10,000,000. The city has been made a subport of entry, and ships load here with refined oil and other petroleum products for all parts of the world.

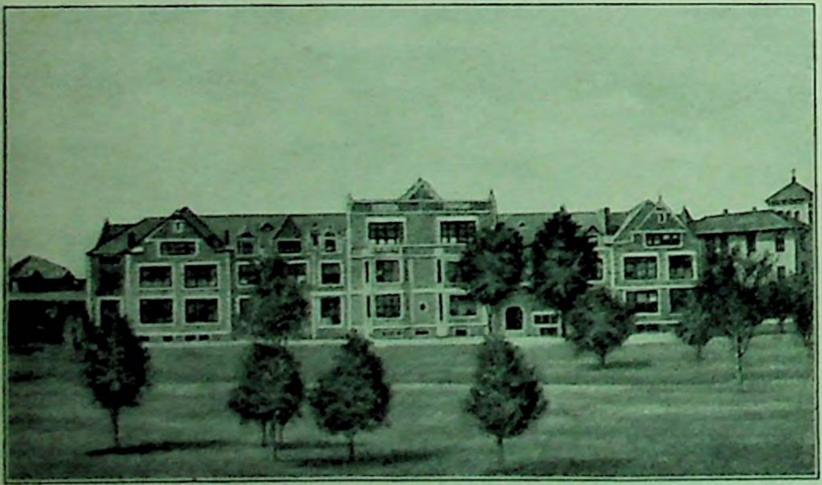
There are several railroads with great connecting lines entering the city. Baton Rouge is the logical point for the projected bridge across the Mississippi.

The public-school system is excellent, and the state has here, connected with the University, its most important experiment station. The Southern University for negroes is near Baton Rouge. The location is healthful, and the soil of the section is well adapted to almost any crop. Dairying and stock-raising are especially promising.

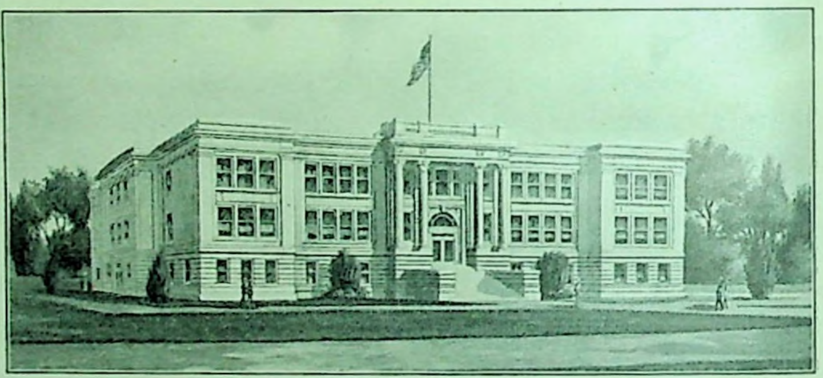
Domestic Science Department, High School, Shreveport

Shreveport, the second city in size, is in the northwestern part of the state, in Caddo parish. When founded it was at the head of navigation on Red river, and it is virtually so to-day. The population (1915) was 35,000. It has grown rapidly since the discovery of oil and natural gas in its vicinity. It is one of the largest inland cotton markets in the United States, and is the most important trade and distributing point in a large section, including parts of Texas and Arkansas. The renewed interest in river navigation is likely to result in much greater traffic by water. The city already has ten railroad lines.

The manufacturing interests have rapidly increased since the introduction of, and low rate for, natural gas as fuel. The city now has car shops, foundries, glass factories, oil mills, compresses, fertilizer works, sawmills, and factories for making brick, furniture, sirup, and candy. It claims more miles of paved streets than any other city of its size in the South and has a convenient electric-car system. For its excellent graded schools there are six well-equipped buildings, besides the schools for negroes. The Methodist Church has located Centenary College in Shreveport; the Catholics have St. John's College for boys, and St. Mary's, a large convent for girls. There are also good private schools. Several first-class sanitariums and the big Charity Hospital are institutions worthy of note. Modern hotels, a good theater, and handsome homes are evidences of prosperity. The State Fair Grounds, representing a large investment for city and state, are located here.


State Normal School, Natchitoches

Lake Charles (15,300) is situated in the southwestern part of the state, on an expansion of the Calcasieu river, which furnishes direct navigation for small vessels to the gulf. It is the seat of Calcasieu parish, rich in oil, lumber and sulphur. This town is the center of what is perhaps the most extensive lumber industry in the South. It contains one of the largest rice mills in the United States. It has important factories, machine shops and first-class railroad facilities. The climate is delightful at all times. The products of the surrounding country are varied. Corn, rice, cane, cotton, potatoes, besides oranges, figs and other fruits, grow readily.


Bolton High School, Alexandria

Alexandria (15,300) is situated on Red river, in Rapides parish, near the center of the state. The town ranks third in the state in the number of its railroads. It has fine school buildings, the Bolton High School being one of the finest in the state, a public library, handsome public buildings and a hotel ranking with the best in the state.

The streets are well paved, the city-owned electric-car system is good, and there are oil mills, compresses and sawmills. The near-by country is on the border of the cane region and produces all of the Louisiana crops except rice. A great deal of truck and many strawberries are grown near Alexandria. Within fifty miles of the city there are at least fifty sawmills. Across the river is **Pineville,** which contains a national cemetery and the new state asylum for the insane. Louisiana College is here.

Monroe, a beautiful city on the banks of the Ouachita river, has a population of 12,200. It has several banks, oil mills, machine shops, lumber and shingle mills, a sash, door and blind factory, and ice plants. Two iron bridges span the river, and several railroads enter the town. Monroe has electric cars (city-owned), many miles of paved streets, beautiful homes and handsome school buildings. The State Reform School is located here. The land is very fertile, and the surrounding country ideal for trucking and dairying.

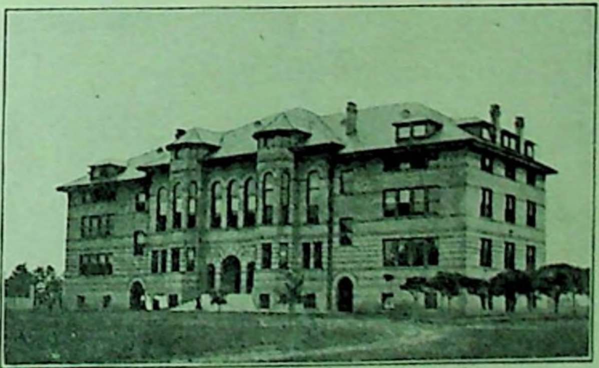
Natchitoches is situated on both sides of the Cane river, which is spanned by an iron drawbridge. This river was once the main channel of the Red river, which is now four miles distant at Grand Ecore. The town has a population of about 3600. It is built along the river and extends back on the west side about two miles to the pine hills which skirt the town on that side. The soil near the river is free from overflow and wonderfully productive. Large crops of cotton, corn, sugar cane, alfalfa and Bermuda hay are grown as staples. It is also a country for truck-growing and stock-raising.

Natchitoches, settled in June, 1714, is the oldest permanent settlement in the Louisiana purchase, and early became an important charge of the Catholic Church. Until quite recently it was the residence of the bishop and contained the only cathedral outside of New Orleans. It is the home of a large and well-conducted convent. There are four Protestant churches. The town has three banks, oil mills, a fine compress, an ice factory, a sawmill and a large brickyard. The town has several miles of paved streets and owns its electric-light and water works. Two lines of railroad enter the town, which is within twenty miles of some of the largest mills in the state. It is an important shipping point and trading center.

The State Normal School of Louisiana is at Natchitoches. The handsome buildings and ample dormitories are located on a beautiful campus that forms a part of the school grounds, which comprise in all 350 acres of meadow and woodland.

Among other towns of interest are the following:

Ruston (3300), in Lincoln parish, is well situated, with good railroad facilities and shops. It is the seat of the Louisiana Industrial Institute—one of the newer but stronger schools of the state, with a large attendance. Near here are the old Chautauqua grounds, where many believe the educational revival in Louisiana was started.

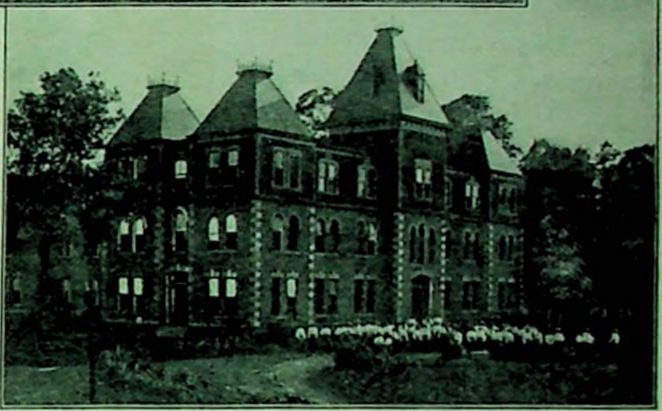


Southwestern Industrial Institute, Lafayette

Lafayette (7000), the seat of the Southwestern Industrial Institute, is of both educational and commercial importance. The main line of the Southern Pacific passes through here, and the surrounding country is rich and productive. It is near the recently developed and probably rich oil field of Anse la Butte.

New Iberia, Franklin, Plaquemine, Donaldsonville and **Thibodaux** are rich and progressive towns in the sugar belt.

Bogalusa, located on a branch of the Pearl river, is the most modern town in Washington parish. It claims a population of 10,000, all interested in the lumber industry.



Louisiana Industrial Institute, Ruston

13. Government

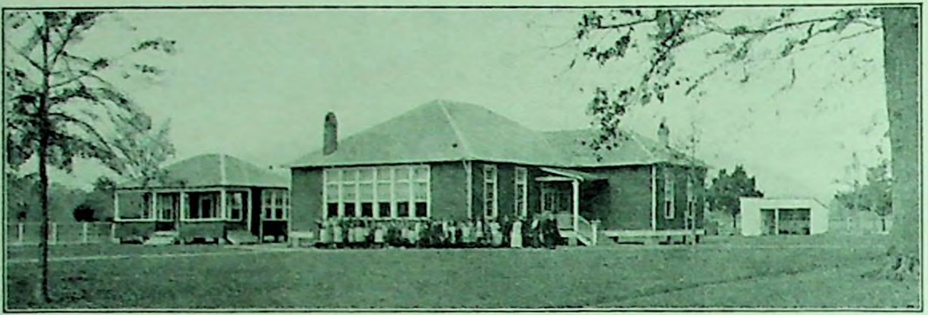
The government is divided into executive, judicial and legislative departments.

The officers of the executive department are the governor, the lieutenant governor, the secretary of state, the treasurer, the auditor, the attorney general, the superintendent of public education and the commissioner of agriculture. The registrar of the land office and the railroad commissioners now properly come under this head. These are all elected by direct vote of the people for terms of four years. The governor and the treasurer cannot serve two consecutive terms. All these officers may be recalled by popular vote, though the per cent of the voters required to sign the petition for calling such an election is so large as to be almost prohibitive.

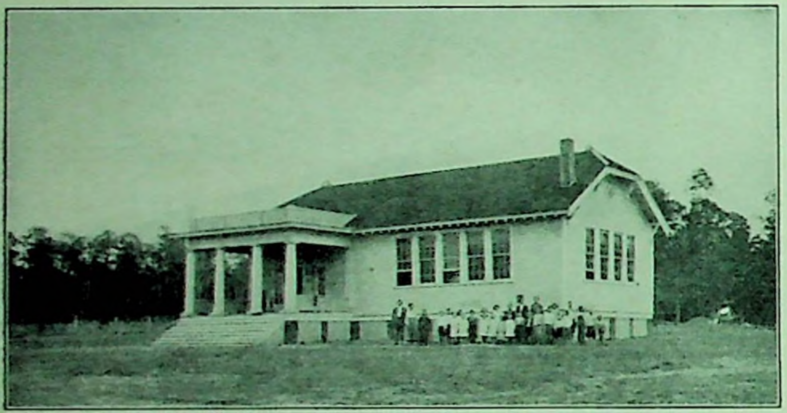
The judicial department consists of a Supreme Court, composed of five members elected each for a term of twelve years. The judge who has served longest is chosen Chief Justice. This court holds its sessions in the famous Cabildo at New Orleans. The Circuit Courts, acting as Courts of Appeal, are divided into two circuits with three districts in each. The Circuit judges are elected for terms of eight years.

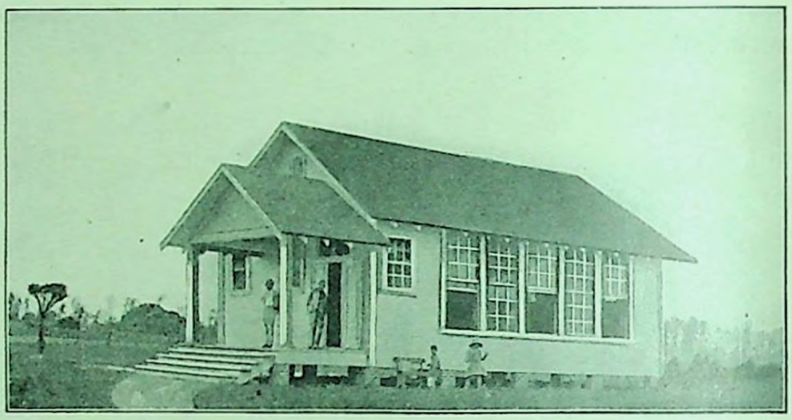
There are also twenty-nine District Courts outside of Orleans parish. Several of these districts have two judges each. In New Orleans the courts are divided, to facilitate business, into civil and criminal branches. There is also the City Court of Appeals, to which cases from neighboring judicial districts may be carried. The judges are elected for four years.

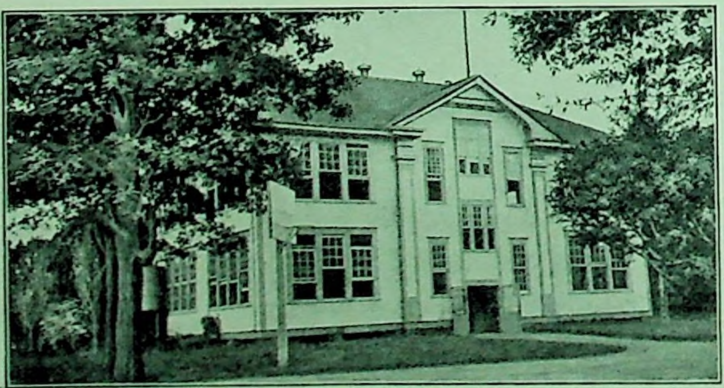
In the parishes there are one or more justices of the peace for each ward. The mandates of the justices' courts are carried out by the constable, those of the higher courts by the sheriff.


Ninth ward consolidated school and domestic-science cottage, East Baton Rouge parish

The legislative department consists of the General Assembly, or Legislature, composed of the Senate and the House of Representatives. The General Assembly meets biennially at the Capitol in Baton Rouge on the second Monday in May, of even-numbered years, for a term not exceeding sixty days. It may be called in special session by the governor for a term not exceeding thirty days. The Senate has reached its maximum of forty-one members, and the House of Representatives now has 115 of the 116 members possible under the present constitution.


Model one-room school, Oxford, De Soto parish


The Perkins School, Calcasieu parish


Olla-Standard Consolidated School, La Salle parish

The state is represented in Washington by two senators and eight representatives. The former are elected by the direct vote of the people from the whole state, while the latter are chosen by popular vote from the congressional districts.

The civil laws of Louisiana are of peculiar interest, as they are founded upon the Code Napoléon, or the civil code of France, which is quite different from the common law of other states.

Besides these departments of the government there are a number of important boards of administration, the members being appointed by the governor or serving *ex officio*. Among these are the State Board of Education, the Levee Boards, the State Board of Health, the Conservation Commission, the Pension Commission, the New Orleans Dock Board, the Penitentiary Board of Control, the Board of Liquidation and the Board of Pardons.

The local political unit in Louisiana is the parish, which elects its officers every four years. The officers are the sheriff and tax collector, clerk of court, assessor and coroner. Besides these are the police jury, a member of which is chosen from each ward; and the school board, one third elected every two years. The police jury selects the parish treasurer, while the parish superintendent of education, who must hold certain qualifications as a teacher, is selected by the school board. Since the division of Calcasieu, Louisiana has 64 parishes.

For purpose of local municipal government the communities are divided into villages, towns and cities, with rights of incorporation and in several cases special charters giving distinctive privileges. The officers of an incorporated town are the mayor, board of aldermen, clerk or tax collector, marshal and city physician.

New Orleans, Shreveport, Baton Rouge, Alexandria and some other towns now operate under a commission form of government, which is an application of the short-ballot plan.

In nearly all matters of government the city of New Orleans, on account of its dense population and complex problems, has special legislative acts applying to it alone.

14. Education

Under the wise guidance of able schoolmen Louisiana has made remarkable progress in education during the last ten years and now spends annually $7,125,000 on her public schools. The establishment of 161 high schools (exclusive of those in the city of New Orleans), a number of which have well-equipped departments in agriculture and domestic science, taught by a well-trained and supervised corps of teachers, is bringing about marvelous results in interest and coöperation from the child and the taxpayer.

Domestic-Science Department, High School, Morgan City

Where the high school is not available, hundreds of two-room to five-room consolidated schools are taking the places of old one-room schools. This consolidation is being made possible and successful by the immense impetus given to the good-road movement in Louisiana during the last few years and the consequent introduction of transfer wagons.

Girls' Canning Club exhibit, Lafayette parish

LA. CORN GROWERS ASSN.
GENERAL CORN EXHIBIT
FARM DEMONSTRATION WORK INDIVIDUAL FARMERS.
Corn-club boys judging corn at the Louisiana State Fair

The best of these graded schools, with their buildings, grounds, athletics and larger associations, are doing much to make rural life more pleasurable and valuable to the boys and girls.

Sow and pigs shown by champion pig-club boy at the Louisiana State Fair

The old uncared-for frame building is fast disappearing, and nearly every town of any size has a fine school building of concrete or brick, costing as much in some cases as $125,000. In smaller communities and country districts the equipment, though less ambitious, is eminently progressive.

The playground, the athletic field, and the school garden are no longer luxuries; they have become necessities.

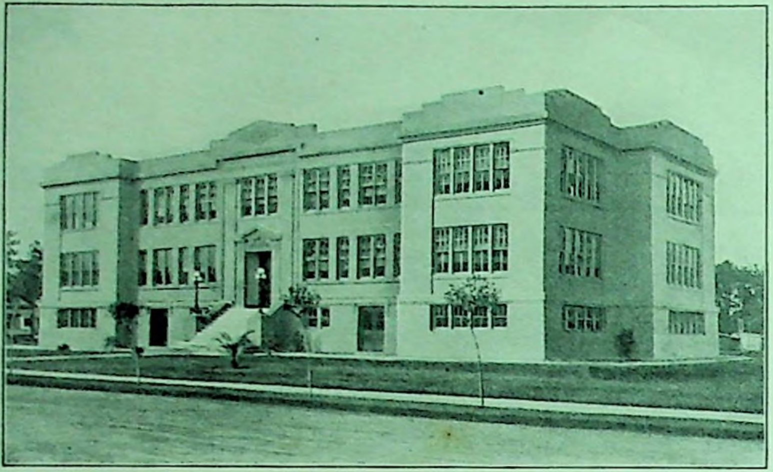
The public schools are under the direction of a state superintendent and board of education (consisting of eight members and with the governor, state superintendent and attorney general as *ex-officio* members), parish school boards and superintendents.

Connected with the state superintendent's office is a state high school inspector, state rural school supervisor, chairman of the state teachers' examining committee, inspector of agricultural schools and inspector of domestic-science schools. In several parishes the superintendents are assisted by demonstrators or supervisors in rural-school work.

The schools are supported by appropriations from the state, by a poll tax, inheritance tax, certain fines, parish and local taxes and interest on the general school fund held in trust by the state. Each parish must give three mills for the dollar of assessment to the school board, and the special taxes amount, in some cases, to twenty-five mills on the dollar.

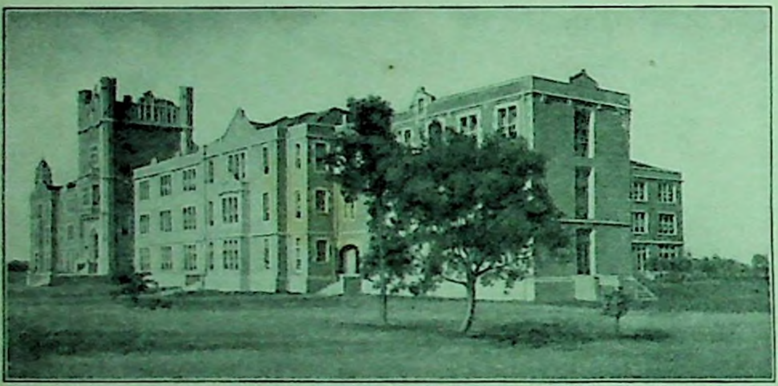
Louisiana is well supplied with special schools. The State Normal School at Natchitoches for the training of teachers, the largest normal school in the Gulf States, runs twelve months in the year with a large attendance, and its graduates comprise over twenty-five per cent of the white teachers in the public schools.

The Louisiana State University and Agricultural and Mechanical College at Baton Rouge, with its experiment stations, teachers' college, extension work and short course for farmers; the Industrial Institute at Ruston; the Southwestern Industrial Institute at Lafayette; the Institute for the Blind and the Institute for the Deaf and Dumb at Baton Rouge; the Reform School at Monroe; and the Southern University for negroes near Baton Rouge complete the present list.



High School at Hammond

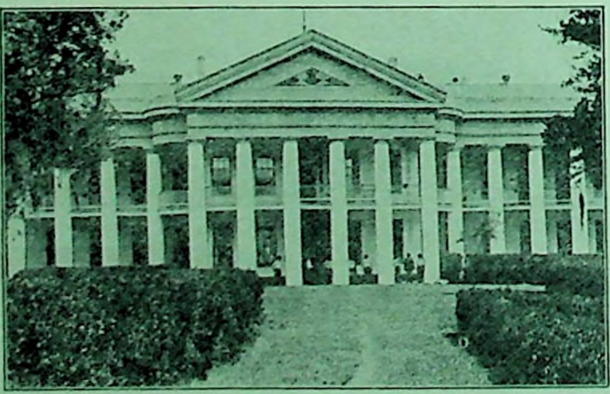
Connected with the State University an extension department has been actively at work and is doing untold good among the young and old, organizing corn clubs, pig clubs and tomato clubs — all leading to the introduction and care of better grades of animals and plants, the saving of the products of farm and orchard, and, last but not least, calling attention to the immense possibilities of the state.



Ursuline Convent, New Orleans

The teachers' institutes in the parishes, and the summer schools at the larger state institutions, in the Florida parishes, and at Tulane University, with an average eight-weeks attendance of about three thousand teachers, are good evidences of educational activity in the state.

The State Board of Health also shows its interest in the public schools by visits of its exhibition cars, publication of bulletins for children, inspection of water and premises, regulations regarding contagious and infectious diseases, and coöperation with local physicians in many ways.

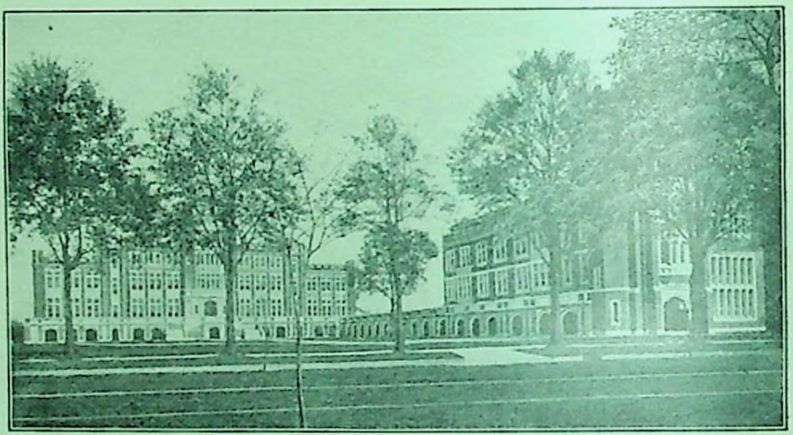


Jefferson College, Convent

The public-school system of Louisiana may be said to have been created by the Constitution of 1845, when provision was first made for the election of a state superintendent, and definite funds were set apart for the maintenance of "free public schools."

The state had long before this a number of academies and colleges partly supported by public funds, and many schools, private and sectarian, of more than local fame. Among the notable private and sectarian schools are Tulane University, with its famous law and medical colleges and its richly endowed and progressive school for women, the H. Sophie Newcomb Memorial College. The latter has attracted much attention in the United States and Europe by its fine and original art work in pottery and textiles.

Besides these there are in New Orleans several first-class schools and colleges and special schools, including the New Orleans Normal and Training School and the Isidore Newman Manual Training School.



Loyola University (Marquette Hall and Thomas Hall)

The leading Catholic institutions are the College of the Immaculate Conception and Loyola University under the direction of the Jesuits; Holy Cross College, also in New Orleans, in charge of the Fathers of the Holy Cross; and Jefferson College at Convent, directed by the Fathers of the Society of Mary. The Ursuline Convent, the oldest educational institution in the state, was founded at New Orleans in 1727. Its first building was completed in 1734. It was the first school for girls established in this country. There are also many other flourishing academies and schools under the direction of Brothers and Sisters of various religious communities.

The Methodists have Centenary College (for men) at Shreveport and the Mansfield Female College at Mansfield; the Baptists have the Louisiana College (for men) at Pineville.

Besides these there are several good public and private schools for negroes, including Straight University, Leland University and New Orleans University. For every boy and girl who desires it Louisiana offers a fair opportunity to get an education. The schools of Louisiana have been brought to the front as never before, and to-day conservative progress and active supervision make them the dominant factor in the community life of the state.

15. Charitable and Penal Institutions

The state maintains two fine charity hospitals, one in Shreveport and one in New Orleans; also asylums for the insane at Pineville and at Jackson, and a soldiers' home in New Orleans for Confederate veterans. The penitentiary is officially located at Baton Rouge, although few prisoners are kept at that place, for since 1898 the convicts have been removed from the penitentiary to state farms and are no longer leased to private contractors. The wisdom of this change redounds greatly to the credit of the state from both humanitarian and economic standpoints.

POPULATION OF PARISHES IN LOUISIANA (CENSUS OF 1910)

PARISH	POPULATION	PARISH SEAT	PARISH	POPULATION	PARISH SEAT
Acadia	31,847	Crowley	Madison	10,676	Tallulah
Allen	(1)	Oberlin	Morehouse	18,786	Bastrop
Ascension	23,887	Donaldsonville	Natchitoches	36,455	Natchitoches
Assumption	24,128	Napoleonville	Orleans	339,075	New Orleans
Avoyelles	34,102	Marksville	Ouachita	25,830	Monroe
Beauregard	(1)	De Ridder	Plaquemines	12,524	Pointe a la Hache
Bienville	21,776	Arcadia	Pointe Coupee	25,289	New Roads
Bossier	21,738	Benton	Rapides	44,545	Alexandria
Caddo	58,200	Shreveport	Red River	11,402	Coushatta
Calcasieu	62,767 [1]	Lake Charles	Richland	15,769	Rayville
Caldwell	8,593	Columbia	Sabine	19,874	Many
Cameron	4,288	Cameron	St. Bernard	5,277	St. Bernard
Catahoula	10,415	Harrisonburg	St. Charles	11,207	Hahnville
Claiborne	25,050	Homer	St. Helena	9,172	Greensburg
Concordia	14,278	Vidalia	St. James	23,009	Convent
De Soto	27,689	Mansfield	St. John the Baptist	14,338	Edgard
East Baton Rouge	34,580	Baton Rouge	St. Landry	66,661 [2]	Opelousas
East Carroll	11,637	Lake Providence	St. Martin	23,070	St. Martinsville
East Feliciana	20,055	Clinton	St. Mary	39,368	Franklin
Evangeline	(2)	Ville Platte	St. Tammany	18,917	Covington
Franklin	11,989	Winnsboro	Tangipahoa	29,160	Amite
Grant	15,958	Colfax	Tensas	17,060	St. Joseph
Iberia	31,262	New Iberia	Terrebonne	28,320	Houma
Iberville	30,954	Plaquemine	Union	20,451	Farmerville
Jackson	13,818	Vernon	Vermilion	26,390	Abbeville
Jefferson	18,247	Gretna	Vernon	17,384	Leesville
Jefferson Davis	(1)	Jennings	Washington	18,886	Franklinton
Lafayette	28,733	Lafayette	Webster	19,186	Minden
Lafourche	33,111	Thibodaux	West Baton Rouge	12,636	Port Allen
La Salle	9,402	Jena	West Carroll	6,249	Oak Grove
Lincoln	18,485	Ruston	West Feliciana	13,449	St. Francisville
Livingston	10,627	Springville	Winn	18,357	Winnfield

INCORPORATED PLACES HAVING A POPULATION IN EXCESS OF 1000 (CENSUS OF 1910)

Abbeville	2,907	Eunice	1,684	Kentwood	3,609	Monroe	10,209	Rayville	1,079
Alexandria	11,213	Franklin	3,857	Lafayette	6,392	Morgan City	5,477	Ruston	3,377
Amite	1,677	Fullerton	1,238	Lake Arthur	1,093	Napoleonville	1,201	St. Martinsville	2,318
Arcadia	1,079	Gibsland	1,065	Lake Charles	11,449	Natchitoches	2,532	Shreveport	28,015
Baton Rouge	14,897	Gueydan	1,081	Lake Providence	1,568	New Iberia	7,499	Slidell	2,188
Berwick	2,183	Hammond	2,942	Lecompte	1,058	New Orleans	339,075	Thibodaux	3,824
Breaux Bridge	1,339	Homer	1,855	Leesville	2,043	New Roads	1,352	Vidalia	1,345
Bunkie	1,765	Houma	5,024	Madisonville	1,028	Opelousas	4,623	Washington	1,528
Colfax	1,049	Independence	1,004	Mandeville	1,166	Patterson	2,998	Welsh	1,250
Covington	2,601	Jackson	2,146	Mansfield	1,799	Pineville	1,212	West Monroe	1,127
Crowley	5,099	Jeanerette	2,206	Marksville	1,076	Plaquemine	4,955	White Castle	2,289
De Ridder	2,100	Jennings	3,925	Melville	1,093	Ponchatoula	1,055	Winnfield	2,925
Donaldsonville	4,090	Jonesboro	1,134	Minden	3,002	Rayne	2,247		

[1] The population of Allen, Beauregard and Jefferson Davis parishes, which have been set off from Calcasieu parish since the Census of 1910, is included in the figures given for Calcasieu. It is estimated that the present population of these parishes is as follows: Allen, 12,929; Beauregard, 14,922; Calcasieu, 18,693; Jefferson Davis, 16,223.

[2] The population of Evangeline parish, which has been set off from St. Landry parish since the Census of 1910, is included in the figures given for St. Landry. It is estimated that the present population of these two parishes is as follows: Evangeline, 20,445; St. Landry, 46,216.

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